Multi-Port Host Interface (MHOSTIF)

SOFTWARE MANUAL

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PRECISION

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Section 1
INTRODUCTION

1.0 INTRODUCTION

The MULTI-PORT HOST Interface (MHOSTIF) software provides an interface between the Bendix family of VMEbus ECS's (Engine Control Systems) and an IBM PC/AT† compatible personal computer designated as the Host Computer. The MHOSTIF provides the user with the ability to view the status of the equipment under control on the Host Display Screen and to command the ECS when it is in control. The following is a list of general functions:

1) Configure ECS to a specific application
2) Display data on user created screens
3) Change operating setpoints and modes
4) Save data in user created data files on disk

MHOSTIF can interface with 32 ECS's simultaneously.

1.1 HOST COMPUTER REQUIREMENTS

1.1.1 The recommended Host Computer requirements are:

- IBM PC/AT or compatible
- 30 Megabyte hard disk
- One 1.2 Megabyte 5.25-inch diskette drive or
  One 1.44 Megabyte 3.5-inch diskette drive
- 640K bytes of Random Access Memory (RAM)
- One serial port (COM1)
- Parallel printer port
- Disk Operating System (DOS) version 3.2 or greater
- 100% BIOS compatible
- Support same video memory map as IBM PC/AT

†IBM-PC/AT are registered Trademarks of International Business Machines Corp.

- EGA or VGA video board and color monitor
- Capability to interface with the number of serial I/O port boards required for the specific installation (refer to Para. 1.1.3).

1.1.2 The minimum requirements for the Host Computer are:

- IBM PC/AT or compatible
- 20 Megabyte hard disk
- One 1.2 Megabyte 5.25-inch diskette drive or
  One 1.44 Megabyte 3.5-inch diskette drive
- 640K bytes of Random Access Memory (RAM)
- One serial port (COM1)
- Disk Operating System (DOS) version 3.2 or greater
- 100% BIOS compatible
- Support same video memory map as IBM PC/AT
- IBM or Hercules monochrome graphics compatible interface and monitor
- Capability to interface with the number of serial I/O port boards required for the installation (refer to Para. 1.1.3).

1.1.3 Requirements For Interfacing With More Than One Control System

To serve multiple systems, the Host Computer must be equipped with from one (1) to four (4) COM/8i serial I/O port boards made by:

Digiboard Inc.
6751 Oxford St.
St. Louis Park, MN 55426
Tel: (612) 943-9020

Each COM/8i serial port board permits eight (8) ECS's to be connected to the Host Computer. Refer to the manufacturer's instructions for installation and configuration.

1.1.4 Printing Screens

If the Host Computer is equipped with a Parallel Printer Port, the "Print Screen" functions of DOS may be used to print a hard copy of the current display screen.

1.2 MANUAL FORMAT

This MHOSTIF manual is presented in three major sections:

- MHOSTIF Installation instructions
- MHOSTIF User guide
- MHOSTIF Reference material

The installation instructions are intended for the installation of the MHOSTIF software on the IBM PC/AT or compatible computer.

The user's instructions are for routine operational use of the MHOSTIF software package.

The reference material provides in-depth descriptions of the file formats.

NOTE

The MHOSTIF manual is written with the assumption that the user is completely familiar with the Host Computer and its Disk Operating System, and with the Host Computer User/Operation Manual.

Section 2
MHOSTIF INSTALLATION INSTRUCTIONS

2.0 MHOSTIF INSTALLATION INSTRUCTIONS

Installation instructions for MHOSTIF involve:

- Establishing the physical interface with the ECS
- MHOSTIF installation
- MHOSTIF systems configuration

2.1 ECS PHYSICAL INTERFACE WITH HOST COMPUTER

2.1.1 Interface To A Single Control System

The only physical interface requirement for Host Computer to the ECS is to complete the cable connection from the RS-232C serial communications connector in the ECS to the COM1 or COM2 port on the back of the Host Computer. Refer to the ECS Installation Manual for specific instructions.

2.1.2 Interface To More Than One ECS

To interface with more than one (1) ECS, the Host Computer must be equipped with one or more COM/8i serial I/O part boards (see Para. 1.1.3). A cable connection must be completed from the RS-232C serial communications connector in each ECS to a specific connector on a COM/8i serial I/O part board installed in the Host Computer. Refer to the ECS Installation Manual for specific instructions.

The serial ports available for each COM/8i serial I/O part board multiple is shown below:

1 ea. COM/8i board, Ports COM03-COM10

2 ea. COM/8i boards, Ports COM03-COM18

3 ea. COM/8i boards, Ports COM03-COM26

4 ea. COM/8i boards, Ports COM03-COM34

2.2 DISKETTES

The MHOSTIF software package is furnished on sets of both 5.25-inch HD (High Density) diskettes and 3.5-inch HD diskettes. Each set contains two diskettes, one labeled MHOSTIF System Disk and one labeled MHOSTIF Utility Disk.

2.2.1 MHOSTIF System Diskette

The MHOSTIF system diskette contains the following software:

*.EXE	Executable programs.

2.2.2 MHOSTIF Utility Diskette

There are (2) two different Utility diskettes (1) for BASIC-C and (1) for TCSD. When ordering the MHOSTIF Software Package specify which Utility diskette is required.

The MHOSTIF Utility diskette contains the following software:

*.BAT	DOS batch files which assist in the installation of the MHOSTIF software on floppy diskettes or hard disk.
*.SYS	MHOSTIF system configuration files. This file can be edited using a word processor in the non-document mode.
*.MSG	Example of USER defined sign-on message. This file can be edited using a word processor in the non-document mode.
\CONFIG*.CDF	ECS configuration download files. A generic file is supplied to provide assistance in setting up these files.
\SCREENS*.DSF	Sample display screen files for the ECS.
\SETPOINTS*.STP	Setpoint files to be downloaded to the ECS. A generic file is supplied to provide assistance in setting up these files.
\BASIC	Help files for BASIC/PV ECS. (BASIC Utility Disk).
\TCSD	Help files for TCSD ECS's. (TCSD Utility Disk).

2.3 INSTALLATION ON A HOST COMPUTER

To install the MHOSTIF software package:

a. Boot up Host Computer (turn ON).
b. When the DOS prompt appears on the screen, insert the MHOSTIF Utility diskette in Drive A: or Drive B:.
c. Enter: at the 'A' or 'B' prompt:

HINSTALL A: or B: <CR>

where <CR> means "Press the 'Enter' key".

'HINSTALL' is a batch file that installs the MHOSTIF software package on the hard disk. It is assumed here that the hard disk drive has the designation letter 'C' and is called Drive C:.

d. After a few minutes, the program pauses and the following message appears at the top of the screen:

INSERT THE SYSTEM DISKETTE IN DRIVE 'A:' or DRIVE 'B:'

C> PAUSE
Strike a key when ready...

When this message appears, remove the Utility diskette. Insert the System diskette in the default Drive, then press any key to continue with the installation.

e. When installation is done, the following message appears at the top of the screen:

MHOSTIF HARD DISK INSTALLATION DONE

'HINSTALL' creates a new subdirectory on the Host Computer disk. This subdirectory is '\MHOSTIF.' Within this directory are the following subdirectories:

\MHOSTIF\CONFIG	contains all the configuration download files.
\MHOSTIF\DUMP	contains all the Dump Parameter Data files.
\MHOSTIF\ERROR	contains all the error files in response to bad configuration downloads.
\MHOSTIF\FSTROKE	contains all files used to store fraction of stroke information used by the P/V ECS.
\MHOSTIF\PV	contains the files that have P/V (Pressure/Volume) data, when applicable.
\MHOSTIF\SCREENS	contains all the display screens for the ECS.
\MHOSTIF\SETPOINTS	contains all the setpoint files to be downloaded to the ECS.
\MHOSTIF\UPLOAD	contains all the configuration upload files read from the ECS.
\MHOSTIF\BASIC	contains all the Help files for BASIC and PV ECS's.
\MHOSTIF\TCSD	contains all the Help files for TCSD ECS.

After the installation process is done, the 'HINSTALL' batch file positions itself on Drive C: under the \MHOSTIF subdirectory.

2.4 MHOSTIF SYSTEM CONFIGURATION

When the MHOSTIF is started, MHOSTIF displays a sign-on message on the screen and reads a USER changeable sign-on message file called MHOSTIF.MSG. MHOSTIF.MSG is a text file that can be edited by the USER with a standard word processor. The file is a standard ASCII file and must be edited in the non-document mode. Only the first 13 lines

of the MHOSTIF.MSG will be displayed. Error messages from reading MHOSTIF.SYS (described below) appear in the status window at the bottom of the screen.

MHOSTIF proceeds to look for a system configuration file called "MHOSTIF.SYS." This file is used by MHOSTIF to tell it about the USER's file structure, serial I/O port configuration and color preferences (when using a color monitor). MHOSTIF.SYS contains commands that determines the MHOSTIF configuration.

The MHOSTIF.SYS file is an ASCII file that can be edited by a standard word processor. The file MUST be edited as a standard ASCII file.

Comments in the"MHOSTIF.SYS" file are allowed and MUST be preceded by a semicolon, ';'. This allows the USER to comment on the contents of the "MHOSTIF.SYS" file.

MHOSTIF.SYS recognizes the following commands:

PASSWORD SYSTEM*	=	**<"System Password">**
PASSWORD SETPOINT*	=	**<"Setpoint Password">**
PASSWORD DUMP*	=	**<"Dump Password">**
PATH <file group>	=	**<DOS path>**
TITLE	=	**<"title">**
COLOR <field name>	=	**<foreground>, <background>**
PORT <Port#>	=	**<id>, <protocol>, <Conf>, <Stp>, <Help>**
DUMP PORT	=	**<port #>, <Baud Rate>**
BOARD1 PORT*	=	**<1st DIGIBOARD I/O port assignment>**
BOARD1 ADDR*	=	**<1st DIGIBOARD I/O base address>**
BOARD2 PORT*	=	**<2nd DIGIBOARD I/O port assignment>**
BOARD2 ADDR*	=	**<2nd DIGIBOARD I/O base address>**
BOARD3 PORT*	=	**<3rd DIGIBOARD I/O port assignment>**
BOARD3 ADDR*	=	**<3rd DIGIBOARD I/O base address>**
BOARD4 PORT*	=	**<4th DIGIBOARD I/O port assignment>**
BOARD4 ADDR*	=	**<4th DIGIBOARD I/O base address>**

A complete description of these commands follows.

2.4.1 MHOSTIF.SYS, PASSWORD Command

The PASSWORD commands specify the access codes, or passwords, which are required to enter the SYSTEM, SETPOINT, or DUMP menus.

The command syntax is as follows:

PASSWORD SYSTEM	=	**<"Code">**
PASSWORD SETPOINT	=	**<"Code">**
PASSWORD DUMP	=	**<"Code">**

<"Code"> is the PASSWORD that the USER must enter to enter the appropriate menu from the 'OPERATOR MENU' <"Code"> can consist of any letter or digit up to 15 characters. Note that the brackets are not part of the code. As an example,

PASSWORD SYSTEM	=	**<"123GO">**
PASSWORD SETPOINT	=	**<"T3WSYJ">**
PASSWORD DUMP	=	**<"BAL259">**

* Comment out if not used.

2.4.2 MHOSTIF.SYS, PATH command

The PATH command (in "MHOSTIF.SYS") is used to set up the sub-directories that the MHOSTIF will look into for given files. It tells MHOSTIF where files are to be found. This command makes directory maintenance easier. The USER can change the PATH command to specify the location of configuration files, help files, etc. as required by the USER's Host Computer system (e.g., program running from diskettes). The PATH command syntax is as follows:

PATH <file group> = <DOS path>

where:

<file group> is:

"CONFIGURATION" to specify which path to use for the ECS's configuration download files.

"DUMP" to specify which path to use when storing dump files.

"DUMPLIST" to specify which path from which to retrieve parameters to be changed.

"ERROR" to specify which path to use to store configuration and setpoint download error files.

"FSTROKE" to specify which path to use to store fraction of stroke information for a PV ECS. (Recip applications only)

"PV" to specify which path to store P/V data from a PV ECS. (Recip applications only)

"SCREENS" to specify which path to use to store and retrieve display screens.

"SETPOINTS" to specify which path to use for the setpoint download files.

"UPLOAD" to specify which path to use to store configuration upload files.

<DOS path> is:

The DOS path name to use for the specified <file group>

As an example, to prevent any unauthorized personnel from configuring ECS's, the individual responsible for configuring the ECS might place all configuration files on a floppy disk and specify that the DOS path to use when configuring is A:. This would be done by the following command in the "MHOSTIF.SYS" file:

PATH CONFIGURATION = A:

Similarly, the dump files can be directed to a floppy disk by specifying the following command in the "MHOSTIF.SYS" file:

PATH DUMP = A:

The MHOSTIF.SYS file MUST contain all the path commands:

```
PATH CONFIGURATION  = ???????????
PATH DUMP           = ???????????
PATH DUMPLIST       = ???????????
PATH ERROR          = ???????????
PATH FSTROKE        = ???????????
PATH PV             = ???????????
PATH SCREENS        = ???????????
PATH SETPOINTS      = ???????????
PATH UPLOAD         = ???????????
```

NOTE

The question marks above indicate that the user can specify any DOS path desired.

The MHOSTIF.SYS file on the System Disk has the following PATH commands:

```
PATH CONFIGURATION  =  C:\MHOSTIF\CONFIG
PATH DUMP           =  C:\MHOSTIF\DUMP
PATH DUMPLIST       =  C:\MHOSTIF\SCREENS
PATH ERROR          =  C:\MHOSTIF\ERROR
PATH FSTROKE        =  C:\MHOSTIF\FSTROKE
PATH PV             =  C:\MHOSTIF\PV
PATH SCREENS        =  C:\MHOSTIF\SCREENS
PATH SETPOINTS      =  C:\MHOSTIF\SETPOINTS
PATH UPLOAD         =  C:\MHOSTIF\UPLOAD
```

2.4.3 MHOSTIF.SYS, TITLE Command

The TITLE command allows the USER to specify the information displayed on the TITLE line (refer to Para. 3.1.1). This can be used, for example, to display the site location, the MHOSTIF software version etc.

The command syntax is as follows:

TITLE = <"title">

The double quotes are necessary. <title> is the information text displayed on the TITLE line. This text (including leading spaces) is automatically centered on the TITLE line.

2.4.4 MHOSTIF.SYS, COLOR Command

The COLOR command allows the USER to specify the foreground and background colors used in MHOSTIF for computers equipped with color monitors. The foreground color is the color used to display characters.

The command syntax is as follows:

COLOR <field name> = <foreground>, <background>

where:

<field name> is the name of the field that will be affected by the color assignment command. The available fields are:

Initial Sign-On Display: (See Figure 3-2)

BENDIX_BANNER	Colors for the Sign-On BENDIX banner.
BENDIX_BANNER_GRAPHICS	Colors for the graphics symbols used in the BENDIX banner. The graphic symbols used in the banner are "└──────┘" etc. (See Appendix A)
USER_BANNER	Colors for the Sign-On USER banner (MHOSTIF.MSG file).

USER_BANNER_GRAPHICS	Colors for the graphics symbols used in the USER banner. The graphic symbols can be DOS characters that have value above 127. Ex. "ƒ ≤ ≥ a o ÷ ± ₙ ? ₂ = ‡" etc. (See Appendix A).
INIT_STATUS	Colors for the Sign-On Display status window.
INIT_STATUS_ERROR	Colors for error messages in the status window.

Title/Status line: (Refer to Para. 3.1.1.1, TITLE/STATUS)

SCREEN	Colors when displaying the current screen name on the status line.
ENGINE	Colors for the ENGINE (ECS ID) field on the status line.
TITLE	Colors for the TITLE line.
DATE	Colors for the DATE field on the status line.
TIME	Colors for the TIME field on the status line.
DUMP	Colors for DUMP indicator
PV	Colors for PV indicator.

Header, Body and Menus: (Refer to Paras. 3.1.1.2, 3.1.1.3, and 3.1.1.4)

HEADER	Colors for default HEADER.
BODY	Colors for default BODY screen.
MENU	Colors for MENUS.
MENU_COMMENT	Colors for the description of a menu command.
MENU_HIGHLIGHT_BAR	Colors for highlighted command.
MENU_HIGHLIGHT_CHAR	Colors for "HOT" key character.
MENU_SPECIAL	Colors for special comments in menu area.

Communications Screen: (Refer to Para. 3.2.1)

COMM_TITLE	Colors for communication screen titles.
COMM_LINES	Colors for communication screen lines (Foreground color only)
COMM_DATA	Colors for communication screen COMM port data

Miscellaneous:

DIR	Colors when displaying a directory of file.
DIR_TITLE	Colors for file directory title.

DIR_HIGHLIGHT	Colors for the highlight bar when displaying a directory of files.
HELP	Colors when displaying HELP information

If a color is not specified, MHOSTIF will use the default color.

<foreground> This is the foreground color used for the selected field. The foreground color can be any of the following:

BLACK	
BLUE	
GREEN	
CYAN	
RED	
MAGENTA	
BROWN	
WHITE	
GRAY	
LTBLUE	(Light Blue)
LTGREEN	(Light Green)
LTMAGENTA	(Light Magenta)
LTCYAN	(Light Cyan)
LTRED	(Light Red)
YELLOW	
LTWHITE	(Light White)

<background> This is the background color used for the selected field. The background color can be any of the following:

BLACK
BLUE
BROWN
GREEN
CYAN
RED
MAGENTA
WHITE

Examples:

```
COLOR TITLE  =  WHITE, RED
COLOR DATE   =  YELLOW, BLUE
COLOR TIME   =  RED, WHITE
```

2.4.5 MHOSTIF Configuration, PORT Command

The PORT command (in "MHOSTIF.SYS") is used to set up the serial I/O ports used to communicate with the ECS's. It tells MHOSTIF which port is connected to which ECS.

The PORT command has the following syntax:

PORT <Port#> = <ID>, <Protocol>, <Conf>, <Stp>, <Help>

Where:

<Port#>	is the serial I/O port name used for the ECS. The I/O port names are COM01, COM02, COM03, ... COM34.
<ID>	is the ECS ID and can contain up to 6 letters or digits. The same ID cannot be used for more than one ECS. Consequently, when it is desired to incorporate the engine number into the ID, and more than one ECS is serving an engine (as in the instance where a single engine has a BASIC and a PV System) it is suggested that a prefix or suffix be added to the engine number to distinguish between the ECS's.
<Protocol>	is the communications protocol between the ECS and the IBM PC/AT. The protocol must be 0. This field is used to support future communication protocols.
<Conf>	is the name of the configuration file for the ECS.
<Stp>	is the name of the setpoint file for the ECS.
<Help>	is the DOS path name that will contain the HELP files for the Control System. A specific HELP file is tied to each port, because it is often useful to have a separately edited HELP file for each ECS.

2.4.5.1 *Port Command, Multiple Ports*

As an example, consider a Host Computer connected to three Control Systems, a BASIC and a PV System, both on engine 906, and a TCSD System on engine 920. The port commands could be written as follows:

```
PORT COM03 = 906BSC, 0, 906BSC, 906BSC, C: \MHOSTIF\BASIC
PORT COM04 = 906PV, 0, 906PV, 906PV, C: \MHOSTIF\BASIC
PORT COM07 = 920, 0, 920, 920, C: \MHOSTIF\TCSD
```

In the example, the BASIC and PV Systems on engine 906 are connected to COM03 and COM04 respectively. The respective Control System ID's, 906BSC and 906PV, are used to preserve the engine identity while providing separate ID's for the two systems. The respective configuration and setpoint files also carry the Control System ID's for ease of identification. The DOS path for the BASIC and PV HELP files is the same.

Assignments for the TCSD System on engine 920 are done in a similar manner, except the engine number without suffix is used for the ID because only one Control System is on the engine.

2.4.5.2 *Port Command, Single Port*

MHOSTIF is capable of communicating with a single ECS from either the COM1 or COM2 ports of the Host Computer. This method of communications does not require the use of a serial I/O multiplexer board, but is restricted to one ECS only.

When COM1 or COM2 option is used, only one Port command must be set for COM1 or COM2 as applicable. All other Port command lines must be preceded by a semicolon (;) or deleted.

As an example, consider a Host Computer connected to a BASIC ECS through COM1 for engine 907. The port command could be written as follows:

```
PORT    COM01  =  <907>,  <0>,  <907BSC>, <907BSC>,  <C:\MHOSTIF\BASIC>
;PORT <COM02> = <2>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
;PORT <COM03> = <3>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
;PORT <COM04> = <4>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
;PORT <COM05> = <5>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
;PORT <COM06> = <6>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
;PORT <COM07> = <7>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
;PORT <COM08> = <8>, <0>, <GENEBSC2>, <GENEBSC2>, <C:\MHOSTIF\BASIC>
```

In the example above, the COM1 port is defined as the port through which BASIC communicates with engine 907. For this application, the user has the option to preface subsequent port command lines with a semi-colon, or to delete the subsequent port command lines.

2.4.6 MHOSTIF Configuration, DUMP PORT Command

The DUMP PORT command (in"MHOSTIF.SYS") is used to set up the serial I/O ports used to communicate with printer. It tells MHOSTIF which port is connected to the printer.

The PORT command has the following syntax:

DUMP PORT = <Port#>, <Baud Rate>

Where:

<Port#>	is the serial I/O port name used for the printer. The I/O port names are COM01, COM02, COM03, ... COM34.
<Baud Rate>	is any acceptable baud rate (300, 1200, 2400, 4800, or 9600). If no baud rate is specified, 1200 is used as a default. The baud rate can also be set directly from the menu.

2.4.7 MHOSTIF Configuration, DIGIBOARD Parameters

The DIGIBOARD Parameters BOARDXAddr and BOARDXPort (in "MHOSTIF.SYS") are used to allow various combinations of base addresses and I/O port assignments to be used with up to 4 DIGIBOARDS. These assignments the syntax is as follows:

Where:

"X" = 1 to 4

BOARD"X"Addr = <DIGIBOARD"X" base address>
BOARD"X"Port = <DIGIBOARD"X" I/O port assignments>

The DIGIBOARD addressing commands that can be added to MHOSTIF.SYS are shown in the examples below:

BOARD1 Addr = D8000
BOARD1 Port = 320
BOARD2 Addr = D0000
BOARD2 Port = 300
BOARD3 Addr = C8000
BOARD3 Port = 220
BOARD4 Addr = C0000
BOARD4 Port = 200

Where the BOARDXAddr parameters can be set to any of the following four base address choices:

1. D0000
2. D8000
3. C0000
4. C8000

And the BOARDXPort parameters can be set to any of the following 7 possible I/O Port assignments.

1. 100
2. 110
3. 120
4. 200
5. 220
6. 300
7. 320

If the DIGIBOARD parameters are not added to MHOSTIF.SYS, MHOSTIF will assume the following default address depending on which COMX ports are assigned:

					DEFAULTS
(1st DIGIBOARD)	**COM3**	**thru**	**COM10**	**->**	**D8000, 320**
(2nd DIGIBOARD)	**COM11**	**thru**	**COM18**	**->**	**D0000, 300**
(3rd DIGIBOARD)	**COM19**	**thru**	**COM26**	**->**	**C8000, 220**
(4th DIGIBOARD)	**COM27**	**thru**	**COM34**	**->**	**C0000, 200**

If only one DIGIBOARD is installed, only DIGIBOARD1Addr and DIGIBOARD1Port need to be added and COM3 thru COM10 will be used no matter what addresses are selected. If a second DIGIBOARD is installed, DIGIBOARD2Addr and DIGIBOARD2Port also can be added to MHOSTIF.SYS file along with COM11 thru COM18, and so on for up to four DIGIBOARDS.

Section 3
MHOSTIF USER GUIDE

3.0 MHOSTIF USER GUIDE

3.1 GENERAL INFORMATION

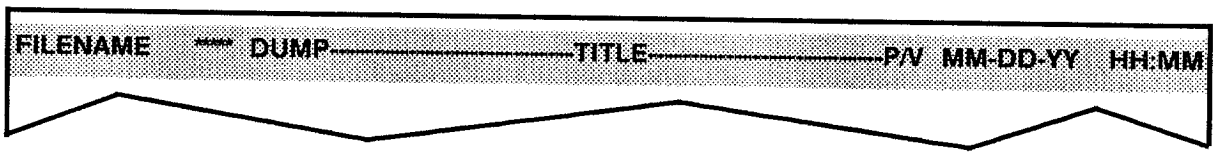
3.1.1 MHOSTIF Screen Format

MHOSTIF Screen, with the exception of the STARTUP Screen (see Figure 3-2), all have the format shown in Figure 3-1.

The console display of the Host Computer contains 25 lines of 80 columns each. MHOSTIF divides the screen into four sections:

3.1.1.1 *TITLE/STATUS*

The first line of the screen is the TITLE/STATUS.



The **FILENAME** field contains the name of the file currently in use.

The '****' field contains the current ECS (Control System) ID.

The **DUMP** field indicates the status of the DUMP process. When this field is blank, MHOSTIF is not set to acquire data from ECS's to store to disk. When this field indicates DUMP (non flashing), MHOSTIF is ready to start the DUMP process but the date and time of dump has not been reached. When DUMP is flashing, MHOSTIF is in the process of acquiring data from ECS's and storing this data to a disk file.

The **TITLE** is displayed in the middle of the TITLE/STATUS line and it contains a fixed message that is determined in the MHOSTIF.SYS file with the 'TITLE' command. The TITLE can contain a combination of up to 40 letters and digits, and is automatically centered.

The **P/V** field indicates that MHOSTIF is in the process of collecting P/V data from a P/V equipped ECS.

The two fields on the right (**MM-DD-YY** and **HH:MM**) indicate the current date and time respectively.

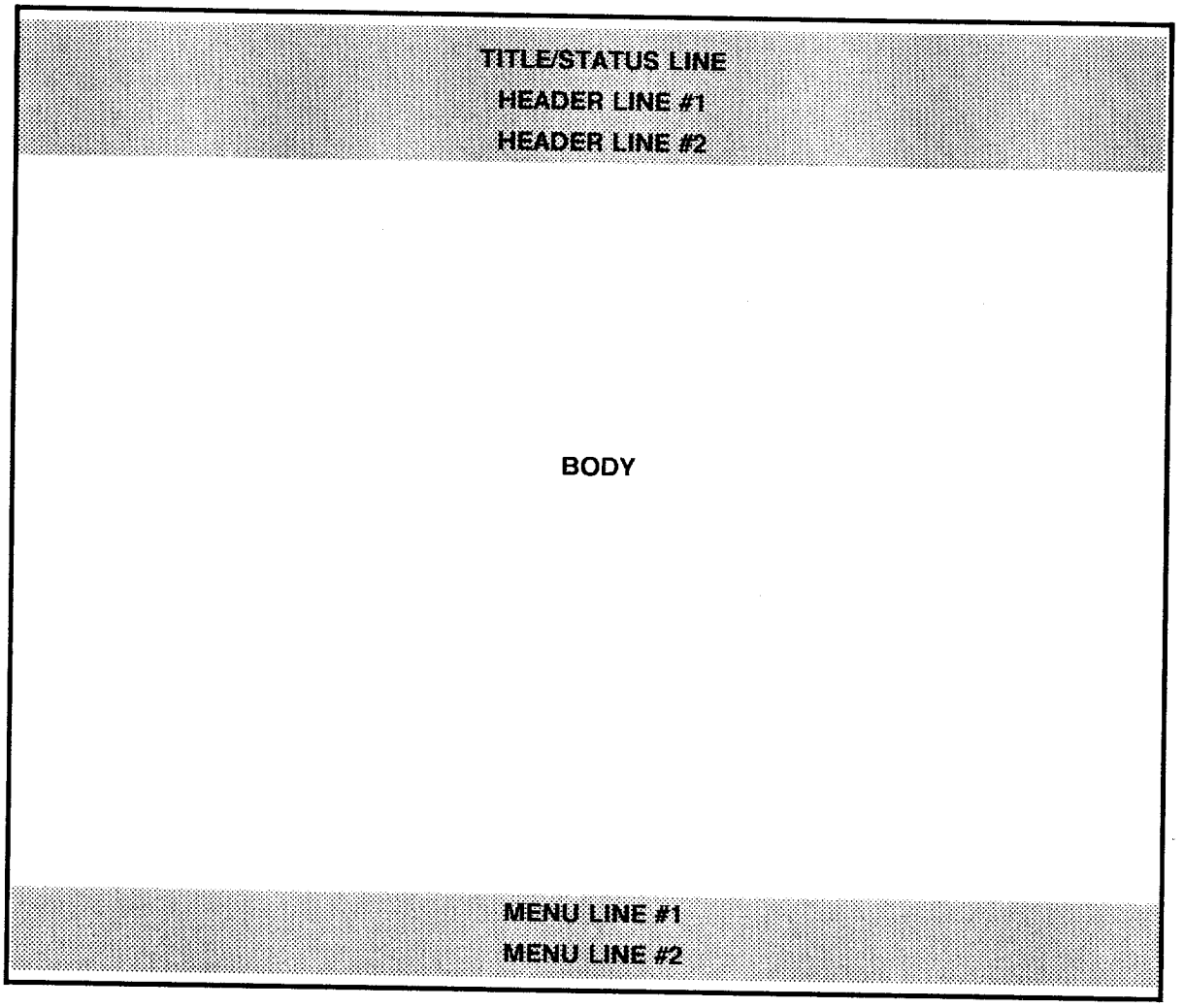


Figure 3-1
MHOSTIF Screen Format

3.1.1.2 *HEADER*

The next two lines on the screen are called the HEADER and contain USER selectable information that is updated about once a second. Creating and editing the HEADER is described in Para. 3.3.7.

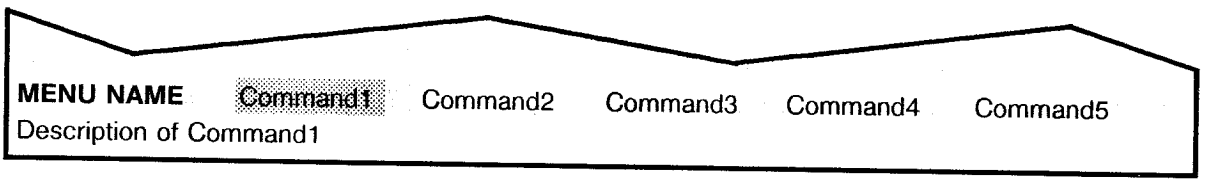
3.1.1.3 *BODY*

Lines 4 through 23 of the screen are called the BODY. The contents of the BODY depend upon the current command being processed. Typical uses of the BODY are to display control parameters or file directories and to edit display screens. Creating and editing screens for the BODY are described in Para. 3.3.7.

3.1.1.4 *MENU*

The bottom two lines of the screen (lines 24 and 25) are called the MENU. The MENU presented to the USER varies depending upon what operation the USER wishes to perform. There are a number of commands allowing the USER to examine and set control parameters, build disk data files, edit screen display formats, etc.

All menus work the same. The first menu line contains a list of the available commands. One of these commands is highlighted. To execute the highlighted command, press the 'Enter' key. Any other selection can be highlighted by using the left or right arrow keys. When a menu selection is highlighted, a more complete description of the command is displayed on the second row of the menu. One letter in each command is highlighted. A menu selection can also be made by typing the highlighted letter of the appropriate menu selection command.



3.1.2 Cursor Control Keys

Throughout this manual, the USER is prompted to use the cursor control keys to select a file from a directory, select a default engine, position data on the screen, etc.

The cursor control keys are as follows:

UP	arrow key
DOWN	arrow key
LEFT	arrow key
RIGHT	arrow key
HOME	key
END	key
PAGE UP	key
PAGE DOWN	key

TAB	key
Shift TAB	key combination
Ctrl LEFT	key combination
Ctrl RIGHT	key combination

The UP arrow key is used to move to the line above the current line. The DOWN arrow key is used to move the line just below the current line.

The LEFT arrow key is used to move to the left of the current position. The RIGHT arrow key is used to move to the right of the current position.

The HOME key is used to move to the upper left corner of the screen. The END key is used to move to the lower right corner of the screen.

The PAGE UP key is used to move to the first row of the current column. The PAGE DOWN key is used to move to the last row of the current column.

The TAB key is used to move to the right by eight character spaces at a time. The Shift TAB key (pressing the Shift key and the TAB key at the same time) is use to move to the left by eight character spaces at a time.

The Ctrl LEFT key combination (pressing the 'Ctrl' key then the LEFT arrow key) is used to move to the left edge of the screen. The Ctrl RIGHT key combination (pressing the 'Ctrl' key then the RIGHT arrow key) is used to move to the right edge of the screen.

3.2 MHOSTIF STARTUP

After calling up the MHOSTIF directory (e.g. :CD \MHOSTIF), the MHOSTIF software is booted up (started) by typing MHOSTIF at the DOS prompt as follows:

C>MHOSTIF <CR>

Where <CR> means press the 'Enter' key.

Then, for several seconds, the Initial Sign-On Display shown in Figure 3-2 appears, followed by the COMM STATUS Screen shown in Figure 3-3.

3.2.1 The STARTUP Screen

When MHOSTIF is started, the STARTUP screen appears. See Figure 3-2.

The top portion of the screen gives information about the manufacturer of the MHOSTIF software package and the version number accompanied by a copyright notice.

The middle portion of the screen is the contents of the MHOSTIF.MSG file which is user-defined. (This file is a standard ASCII file that can be edited with a standard word processor in the non-document mode). The message shown in Figure 3-2 is the message in the file as received from the factory.

The bottom portion of the screen shows the status of the MHOSTIF configuration. If an error is found in MHOSTIF.SYS, a description of this error is given in this portion of the screen.

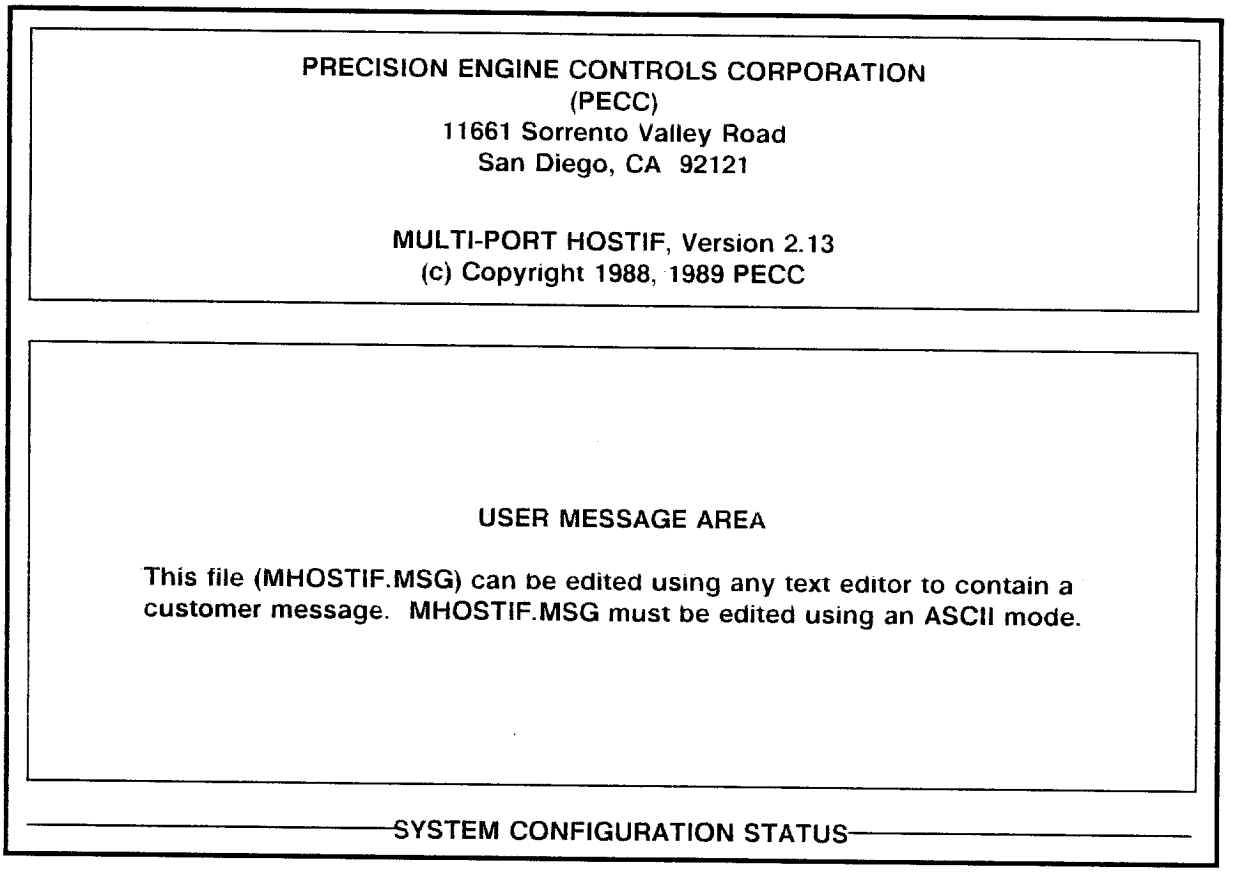


Figure 3-2
MHOSTIF STARTUP Screen

TITLE **MM-DD-YY** **HH:MM**

HEADER LINE #1

HEADER LINE #2

Port Status	Engine ID	Port#	Baud Rate	P/V
Normal Idle	906BSC	COM03	4800	NO
Normal Idle	906PV	COM04	4800	YES
Normal Idle	907BSC	COM05	9600	NO
Normal Idle	907PV	COM06	9600	YES
Starting Up	920	COM07	9600	NO
Starting Up	921	COM08	9600	NO
Disconnected		COM09	NONE	
Disconnected		COM10	NONE	

Port Status	Engine ID	Port#	Baud Rate	P/V

Press ESC for the main menu.

Figure 3-3
COMM STATUS Screen

3.2.2 The COMM STATUS Screen

The COMM STATUS Screen provides the status of all the Host Computer communication ports. See Figure 3-3. When the MHOSTIF software is booted up, this is the second screen displayed.

Port Status Column

The 'Port Status' column indicates the status of the communication ports as follows:

Not Assigned	COMM port not assigned in MHOSTIF.SYS file
Unknow State	System error
No Comm Board	Communication board not installed
Failed Self Test	Communication board self test failure
Bad Com Brd Rev	Bad communication board revision number
Disconnected	Port is disconnected
Invalid Baud Rate	Invalid Baud Rate with ECS
Hardware not RDY	Communication board hardware initializing
Simulate/test	Communication board bypassed for simulation
Starting Up	Establishing communication with ECS
Normal Idle	Normal mode of operation, communicating with ECS
Normal Wtg RX	Normal mode of operation, waiting for response from ECS
Unreadable Chars	Failed to establish communication with ECS.

Engine ID

This column indicates the ECS ID as specified by the USER from the MHOSTIF.SYS file. The COMM STATUS Screen is sorted on this column.

Port Number

This column indicates the communication port number as specified by the USER from the MHOSTIF.SYS file. The port number COM01 or COM02, or COM03 through COM34.

Baud Rate

This column indicates the communication baud rate with the Control System. The indicated baud rate is 300, 600, 1200, 2400, 4800, or 9600.

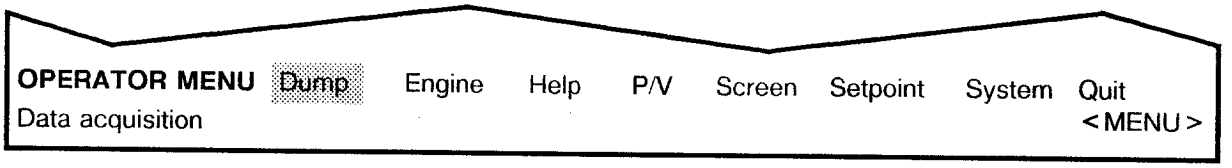
P/V

This column indicates whether a P/V subsystem is connected to the port as specified by the USER from the MHOSTIF.SYS file. The column contains either YES or NO.

3.3 USING MHOSTIF, THE OPERATOR MENU AND SUB-MENUS

MHOSTIF is menu driven. This means that the USER is given a list of commands to choose from in the form of a menu. The USER can only execute a command from the menu presented. The commands that the USER can choose from can bring up another menu or execute a specific function. The different menus and functions that can be executed are presented in the following sections.

When the 'ESC' key is pressed to exit from the COMM STATUS Screen shown in Figure 3-3, the OPERATOR MENU appears across the bottom of the screen. The OPERATOR MENU appears as follows with one of the choices highlighted.



Briefly, the menu choices are

Dump: Allows the USER to collect engine data and store the information into a disk file.

Engine: Allows the USER to change the default ECS which is displayed in the Title.

Help: Allows the USER to get assistance about error codes.

P/V: Allows the USER to store pressure/volume data from a PV System.

Screen: Allows the USER to select a display screen.

Setpoint: Allows the USER to change the value of a setpoint parameter.

System: Allows the USER to perform administrative functions related to MHOSTIF. The 'System Menu' is accessed by entering a password. The 'System Menu' consists of many other menus.

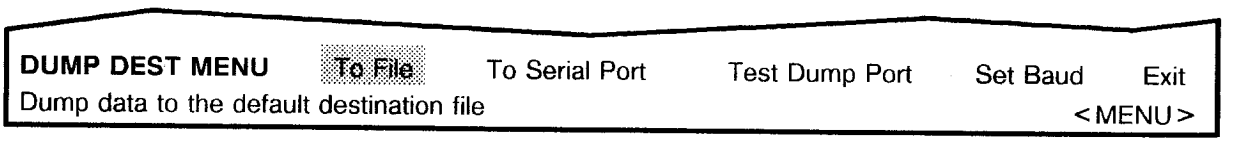
Quit: Allows the USER to return to the DOS prompt.

The following sections discuss the menu commands in detail. There is a separate section for each command. The title of the section starts with the command to be discussed, followed by a series of commands in parenthesis. This is the sequence of commands, starting always from the 'OPERATOR MENU', which must be issued to reach the command being discussed.

3.3.1 DUMP

The DUMP feature of MHOSTIF allows the USER to save the screen data by directing the data to a file or to a serial port. Data is collected based on a time schedule. Data from a screen is collected at a USER selectable interval, and then stored to an ASCII file or routed to a serial port. The USER can also specify the date and the time at which data collection starts. The USER can specify any display screen that exits. Only one screen can be specified per dump routine and only one dump routine can be in effect at any one time. Refer to Para. 3.3.7 for information on creating and editing screens.

When the DUMP command is issued, the DUMP DEST (destination) MENU is displayed in the menu section of the screen.



3.3.1.1 *To File (Dump)*

The 'To File' command allows the USER to direct the data to a file. When the 'To File' command is issued, a 'DUMP STATUS' screen is displayed in thebody section of the screen and the 'DUMP MENU' appears in the menu section of the screen as shown in Figure 3-4.

3.3.1.1.1 *Abort (Dump, To File)*

The 'Abort' command allows the USER to abort or stop the DUMP process. When DUMP is aborted, data in the current dump file will not be deleted, so all samples taken until the time of Abort remain in the file.

```
DUMP MENU  Abort  Date  Time  Duration  Interval  Screen  Set  Exit
Abort data acquisition
```

When the 'Abort' command is issued, the USER is prompted to confirm the choice as follows:

```
Are you sure you want to abort the DUMP? (Y/N) : _
```

When 'N' is entered, the 'DUMP MENU' appears. When 'Y' is entered, the 'DUMP' is aborted and the 'DUMP MENU' reappears.

3.3.1.1.2 *Date (Dump, To File)*

The 'Date' command allows the USER to specify the date at which to start data collection. This command is not allowed if the data collection process is already in progress (e.g., the date cannot be changed once the data collection is started).

```
DUMP MENU  Abort  Date  Time  Duration  Interval  Screen  Set  Exit
Set starting DATE of DUMP (Data acquisition)
```

The USER is prompted to enter the date as shown below. The date must be entered in the format shown. When the date is typed in and the the 'Enter' key is pressed, the data entered appears opposite "Start Date" on the 'DUMP STATUS' screen (See Figure 3-6) and the 'DUMP MENU' reappears.

```
Enter the date to start the DUMP (MM/DD/YY)          Press ESC to abort
Press 'Enter' for current date : _
```

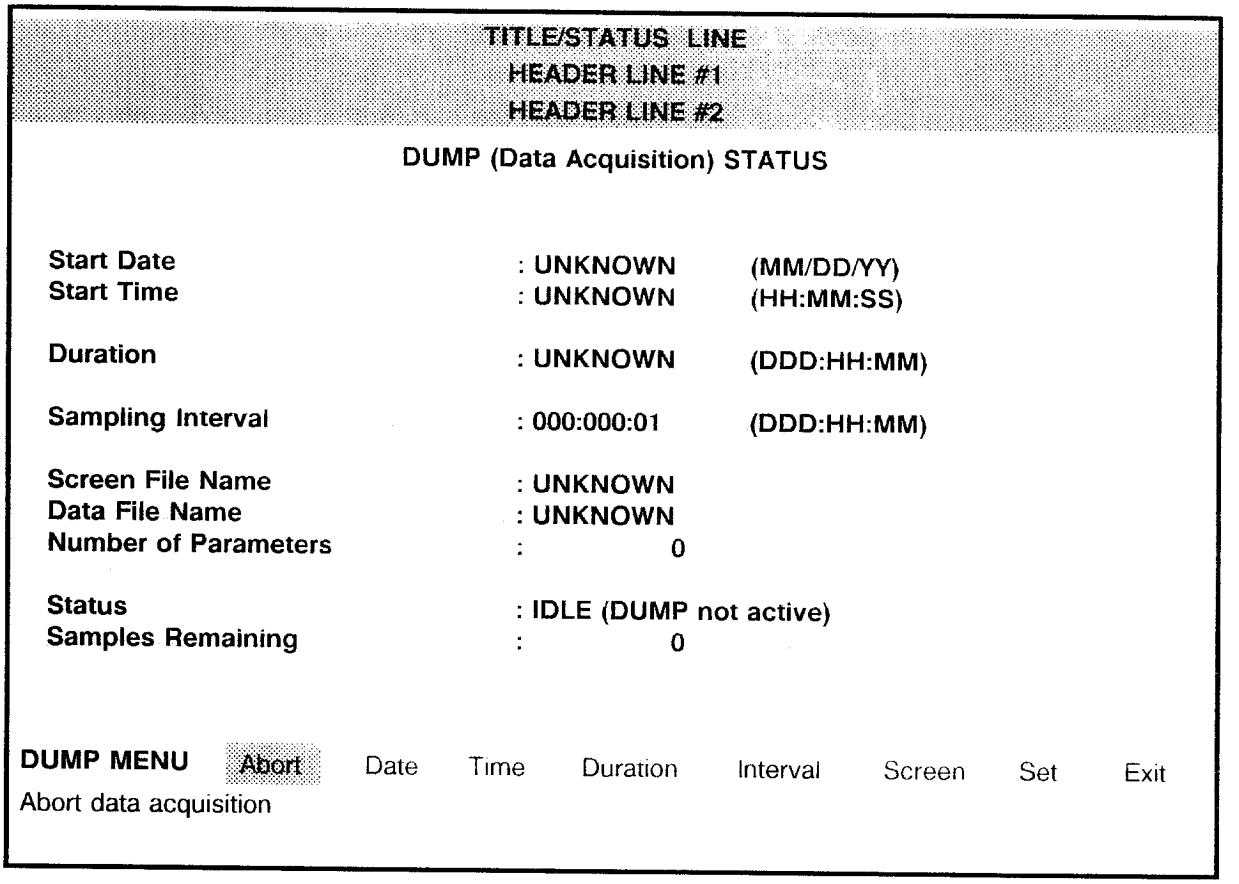
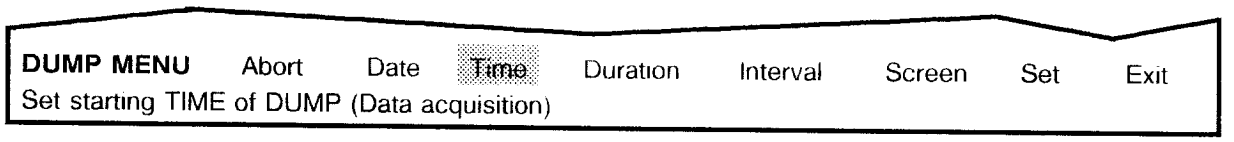


Figure 3-4
DUMP STATUS Screen, IDLE State

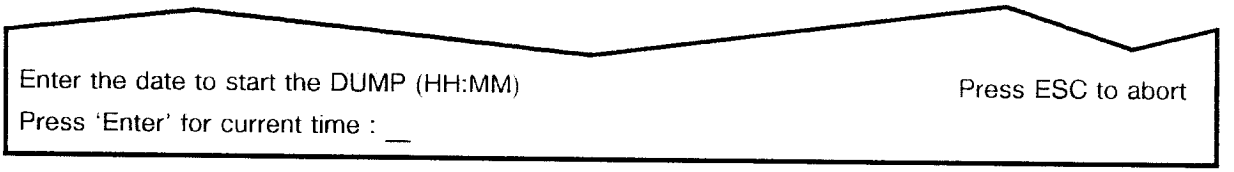
By pressing the 'ESC' key before pressing the 'Enter' key, no data is entered and the 'DUMP MENU' reappears. The same applies to the screens for entering Time, Duration, and Interval.

3.3.1.1.3 *Time (Dump, To File)*

The 'Time' command allows the USER to specify the time at which to start data collection. This command is not allowed if the data collection process is already in progress (e.g., the time cannot be changed once the data collection is started).

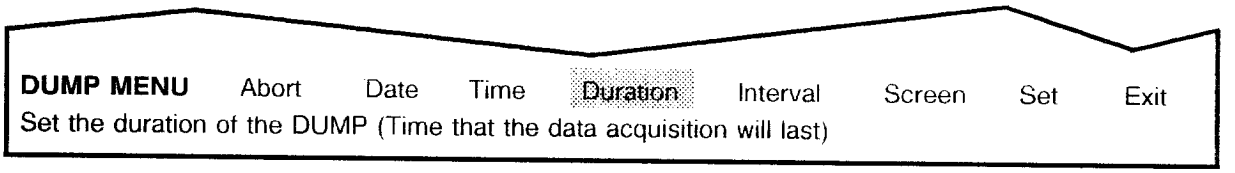


When the 'Time' command is issued, the USER is prompted to enter the time as shown below. The time must be entered in the format shown. Note also that the time is entered in 24-hour format (e.g. 5:00 PM is actually 17:00). When the time is typed in and the 'Enter' key is pressed, the time entered appears opposite "Start Time" on the 'DUMP STATUS' screen (see Figure 3-6) and the 'DUMP MENU' reappears.

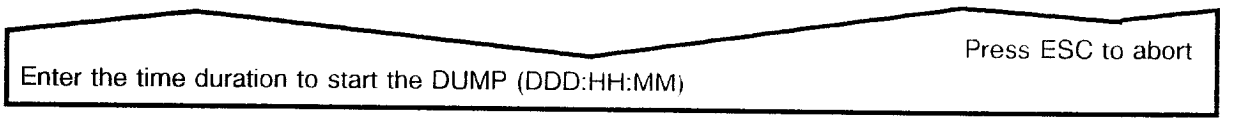


3.3.1.1.4 *Duration (Dump, To File)*

The 'Duration' command allows the USER to specify how long the data collection process will last. This command is not allowed if the data collection process is already in progress (e.g., the duration cannot be changed once the data collection is started).



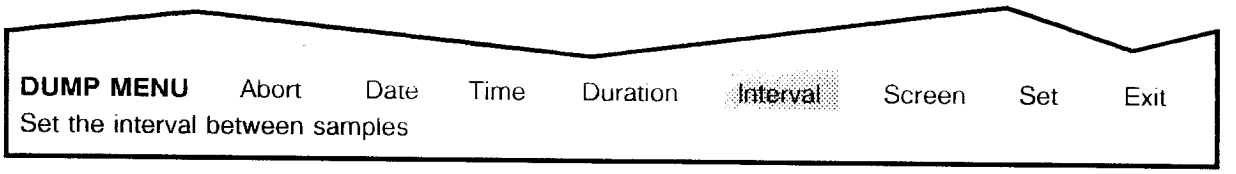
When the 'Duration' command is issued, the USER is prompted to enter the time duration as shown below. The time duration must be entered in the format shown. When the time duration is typed in and the 'Enter' key is pressed, the time duration entered will appear opposite "Duration" on the 'DUMP STATUS' screen (see Figure 3-6) and the 'DUMP MENU' reappears.



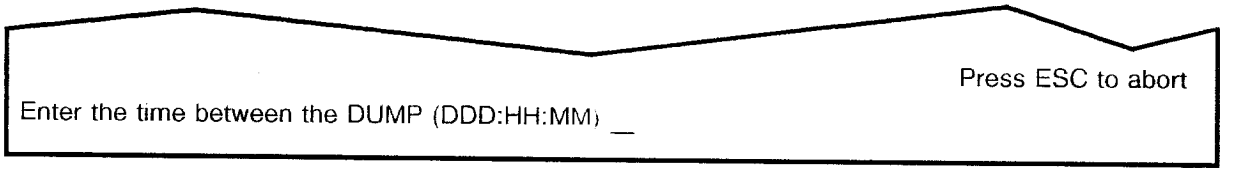
The maximum Duration MHOSTIF will accept is 999 days 23 hours and 59 minutes.

3.3.1.1.5 *Interval (Dump, To File)*

The 'Interval' command allows the USER to specify the time between data collection samples. This command is not allowed if the data collection process is already in progress (e.g., the interval cannot be changed once the data collection is started).

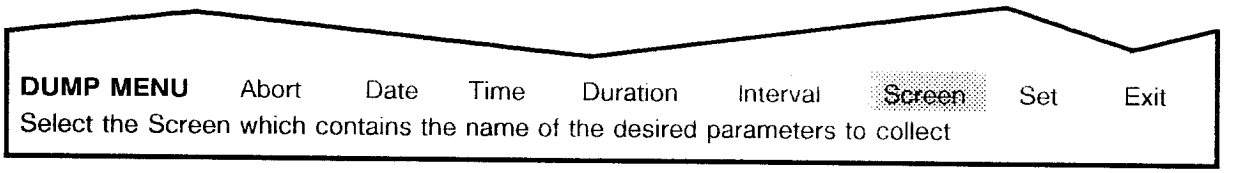


When the 'Interval' command is issued, the USER is prompted to enter the Interval as shown below. The sampling interval is in multiples of one minute. When the interval is typed in and the 'Enter' key is pressed, the interval entered will appear opposite "Sampling Interval" on the 'DUMP STATUS' screen (see Figure 3-6) and the 'DUMP MENU' will appear.



3.3.1.1.6 *Screen (Dump, To File)*

The 'Screen' command allows the USER to specify the display screen which contains the parameters to collect. This command is not allowed if the data collection process is already in progress (e.g., the screen name cannot be changed once the data collection is started).



When the 'Screen' command is issued, MHOSTIF displays a list of display screen names to choose from (for an example, see Figure 3-5). The USER must select one of the display screen names shown in the directory. When the screen has been selected and the 'Enter' key is pressed, the screen name appears opposite "Screen File Name" on the 'DUMP STATUS' screen (see Figure 3-6) and the 'DUMP MENU' reappears.

For information on how to create a screen, refer to Para. 3.3.7.

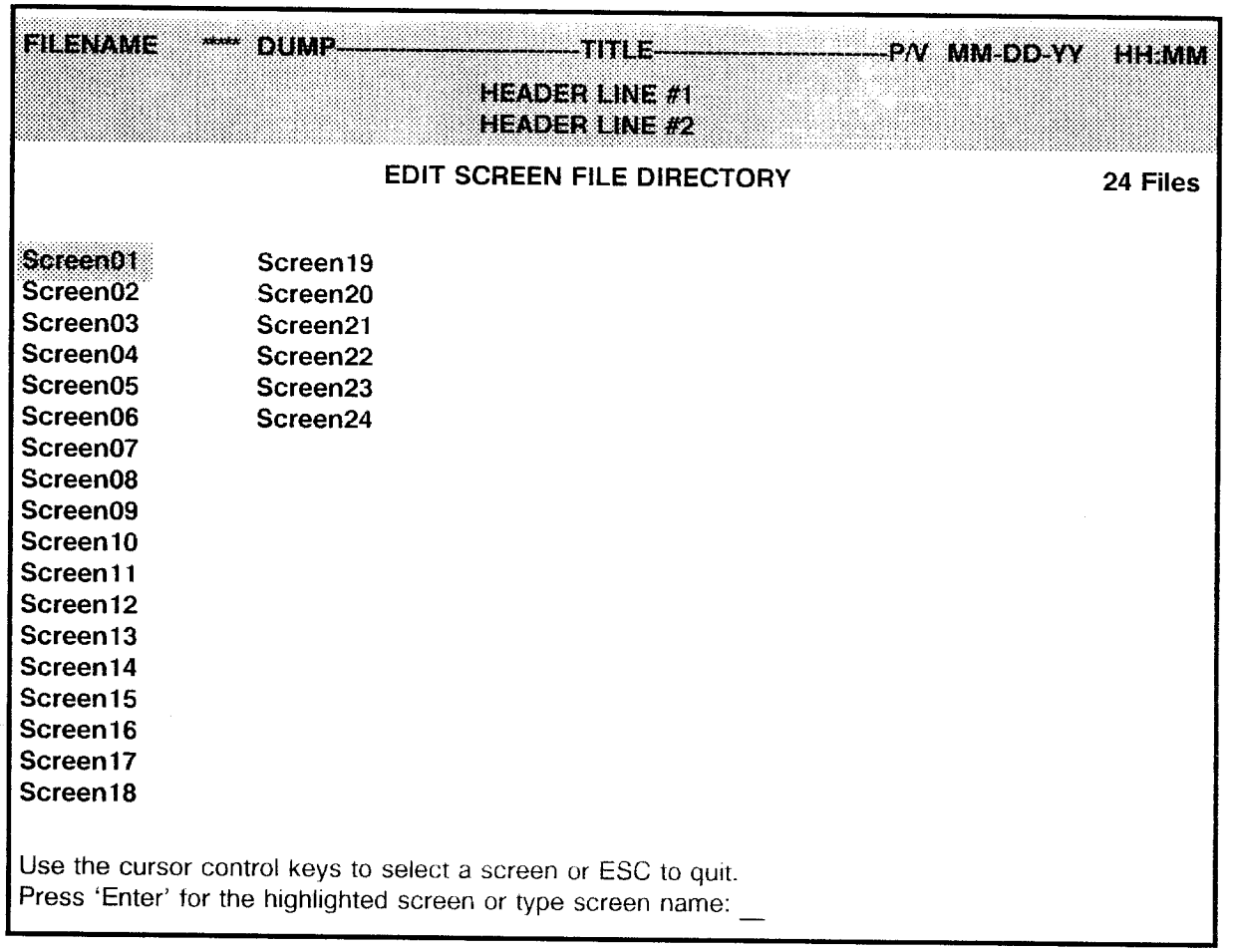


Figure 3-5
Sample Edit Screen file Directory

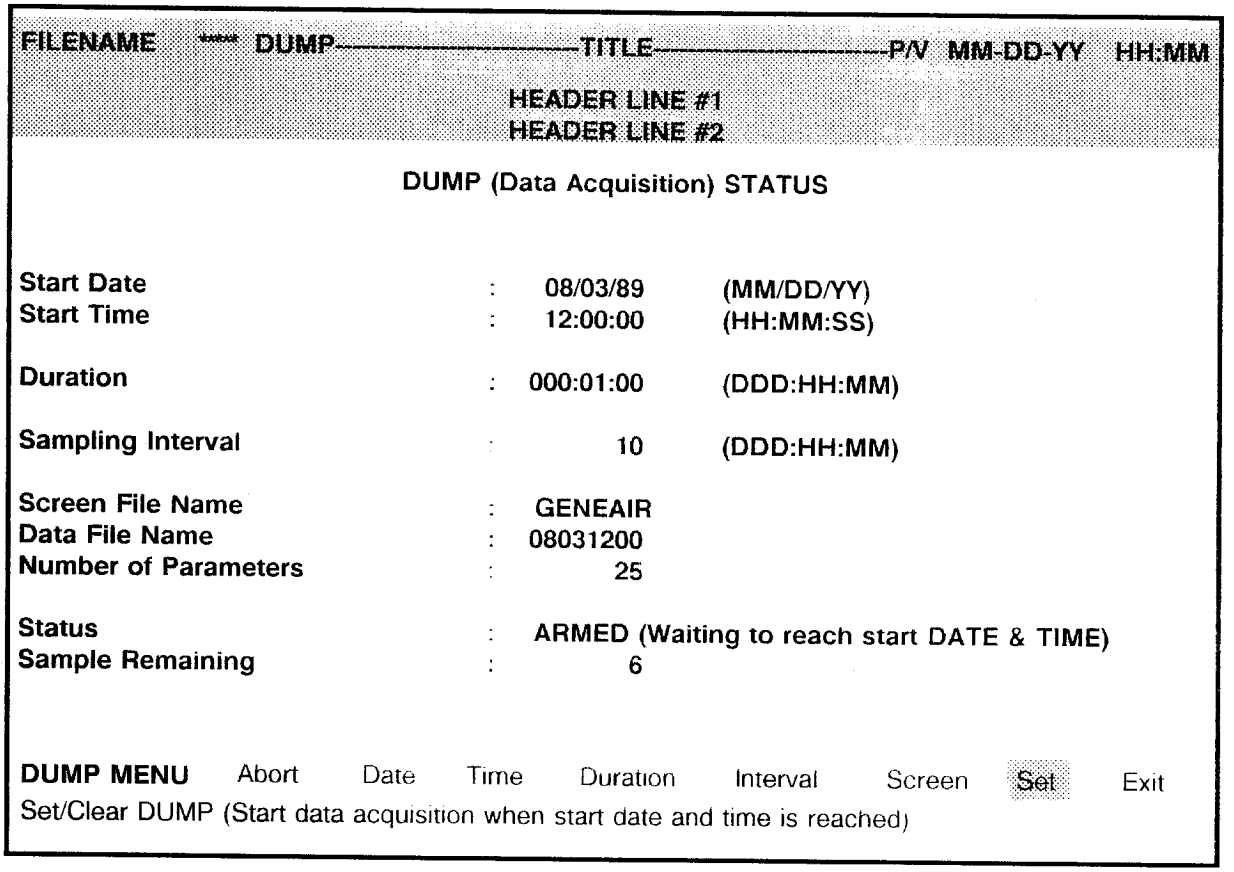


Figure 3-6
DUMP STATUS Screen, ARMED State

3.3.1.1.7 *Set (Dump, To File)*

The 'Set' command allows the USER to set or clear the data acquisition function.

DUMP MENU Abort Date Time Duration Interval Screen Set Exit
Set/Clear DUMP (Start data acquisition when start date and time is reached)

MHOSTIF is in the IDLE state prior to setting data collection. (See "Status" in Figure 3-4.) In this state, the USER can change the start date, start time, the duration of the data acquisition, the sampling interval and the screen that will contain the parameters to collect. When all dump parameters are entered (Start Date, Start Time, Duration/Sampling Interval, and Screen File Name) and the 'Set' command is issued, MHOSTIF is placed in the ARMED state.

Figure 3-6 shows an example of a 'DUMP STATUS' screen with MHOSTIF in the ARMED state. The word ARMED now appears opposite "Status." When MHOSTIF is placed in the ARMED state, a dump file is created and the dump file name appears opposite "Data File Name" on the 'DUMP STATUS' screen. The "Data File Name" takes the form.

MMDDHHMM.DPD

Where the first **MM** represents the start month, **DD** the start day, **HH** the start hours, and the second **MM** the start minutes. This file will be stored in the directory specified by the MHOSTIF.SYS command **"PATH DUMP = ?????"**.

NOTE

The "DPD" file extension does not appear on the 'DUMP STATUS' screen.

As shown in Figure 3-6, when MHOSTIF is in the ARMED state, the 'DUMP STATUS' screen also displays, opposite "Number of Parameters," the number of parameters on the screen selected, and opposite "Samples Remaining," the number of samples yet to be taken.

In the ARMED state, MHOSTIF waits until the current date and time is greater or equal to the start date and time. When this occurs, MHOSTIF starts collecting the parameters specified in the selected screen. When all parameters are collected, their values are written to the dump data file. If MHOSTIF is in the ARMED state when the 'Set' command is issued, MHOSTIF returns to the IDLE state and deletes the file that was created. This cancels the dump before the first sample is collected. Since the file was created when MHOSTIF went into the ARMED state, this file has to be deleted.

3.3.1.1.8 *Exit (Dump, To File)*

The 'Exit' command allows the USER to return to the 'DUMP DEST MENU'.

DUMP MENU Abort Date Time Duration Interval Screen Set Exit
Return to the OPERATOR menu

When the 'Exit' command is issued, the DUMP DEST MENU appears.

3.3.1.2 *To Serial Port (Dump)*

DUMP DEST MENU	To File	To Serial Port	Test Dump Port	Set Baud	Exit
Dump data to the default destination file					<MENU>

The 'To Serial Port' command allows the USER to direct the data to any serial port on a Digiboard as reserved for serial dump. This Serial Port number must be greater than COM02 and can only be used for serial dump.

The port to which the data is to be directed must be assigned in the MHOSTIF.SYS file as follows:

DUMP PORT = <Port#>, <baud rate>

Port # is the port number COM03 to COM34 depending on the number and positioning of the Digiboards.

The optional baud is any acceptable baud rate (300, 1200, 2400, 4800, or 9600). If no baud rate is specified, 1200 is used as a default. The baud rate can also be set directly from the menu.

The following display shows how the MHOSTIF.SYS file would appear with COM03 through COM09 assigned to ECS's and COM10 assigned as the serial dump port.

```
;                    ************************************************
;                      MHOSTIF I/O PORT CONFIGURATIONS
;                    ************************************************
;
;
PORT    COM03   =   00001,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\BASIC
PORT    COM04   =   00002,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\TCSD
PORT    COM05   =   00003,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\BASIC
PORT    COM06   =   00004,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\BASIC
PORT    COM07   =   00005,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\BASIC
PORT    COM08   =   00006,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\BASIC
PORT    COM09   =   00007,   0,   GENEBSC2,   GENEBSC2,   \MHOSTIF\BASIC
DUMP    PORT    =   COM10,   1200
;
```

When the 'To Serial Port' command is issued, a 'DUMP STATUS' screen is displayed in the body section of the screen and the 'DUMP STATUS' screen is displayed in the body section of the screen and the 'DUMP MENU' appears in the menu section of the screen as shown in Figure 3-7.

The command selections are the same as described under 3.3.1 for Abort, Date, Time, Duration, Interval, Screen, Set, and Exit.

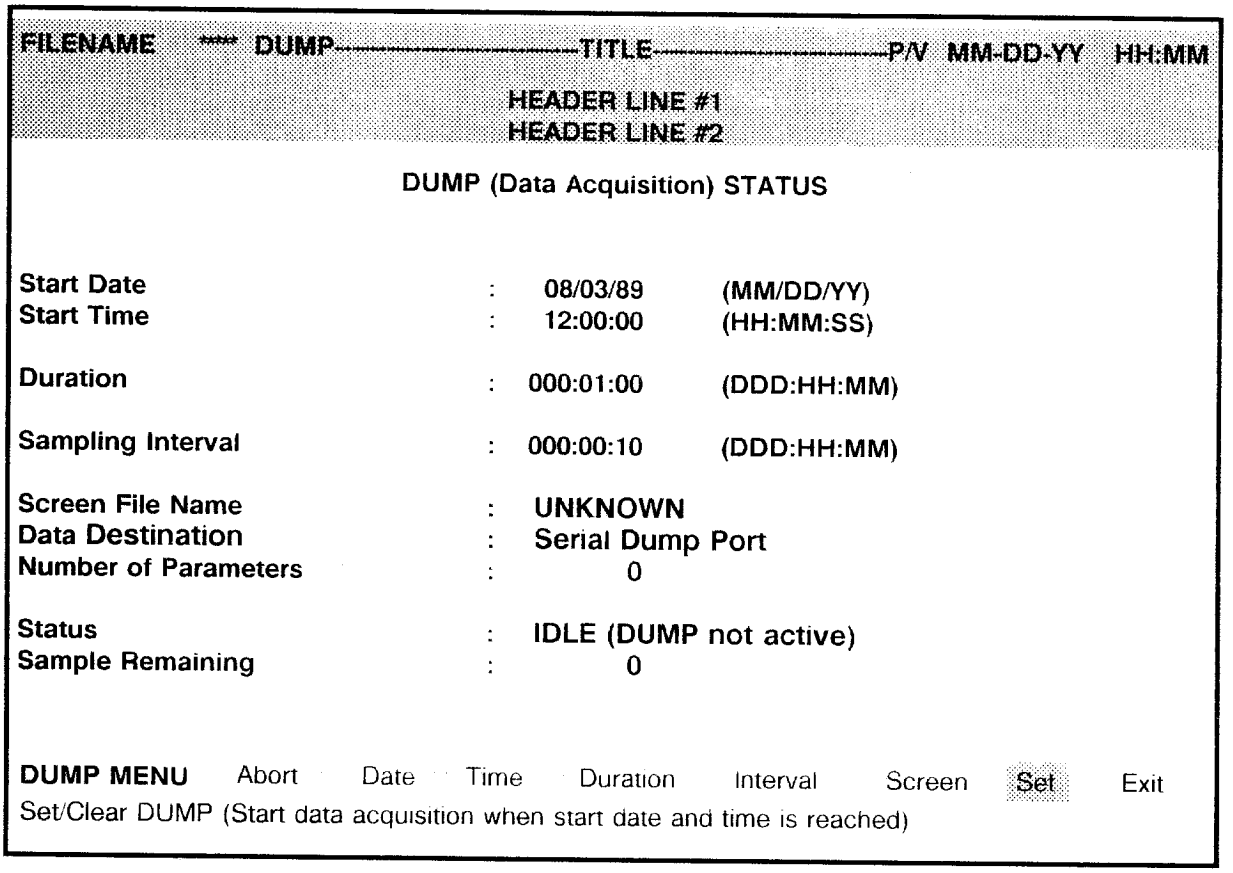
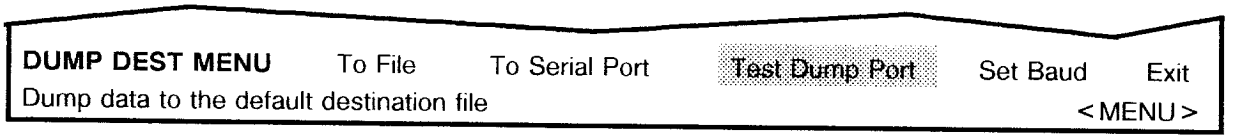


Figure 3-7
DUMP STATUS Screen

3.3.1.3 *Test Dump Port (Dump).*



This command is used for communication test to a serial device. When the 'Test Dump Port' command is issued, a predetermined test string will be sent to the serial device.

The test string may be up to 79 characters long. The test string must be assigned in the MHOSTIF.SYS file as follows.

DUMP TEST = "<test string>"

The test string assignment should be assigned below the I/O port assignments.

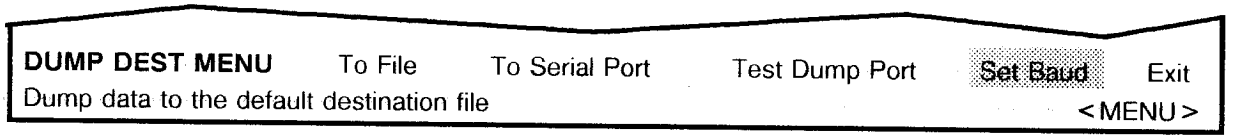
The user may also specify a setup string that will be sent to a serial device at the beginning of each dump session. It is intended to be used to set up printers and other serial devices. The setup string may be up to 79 characters long. The setup string must be assigned in the MHOSTIF.SYS file as follows.

DUMP SETUP = "<setup string>"

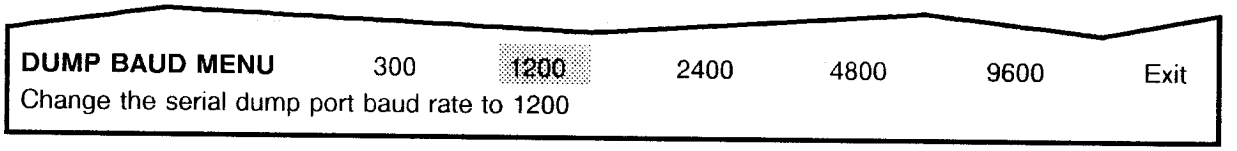
The setup string assignment should be assigned below the I/O port assignments.

3.3.1.4 *Set Baud (Dump)*

The 'Set Baud' command allows the user to change the communication baud rate.

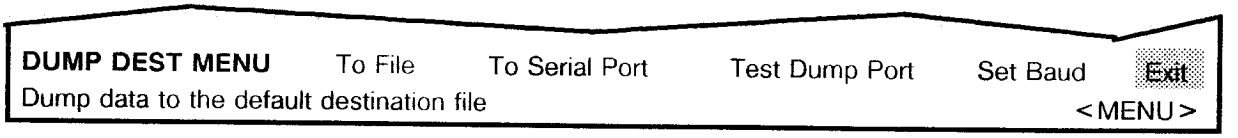


The user is prompted to enter the baud rate which will be acceptable to the device connected to the serial port.



3.3.1.5 *Exit (Dump)*

The 'Exit' command allows the USER to return to the 'OPERATOR MENU'.



When the 'Exit' command is issued, the 'OPERATER MENU' appears.

3.3.2 Engine

The 'Engine' command refers to the ECS ID. This is the ID which appears in the COMM STATUS Screen in the column entitled "Engine ID." (See Figure 3-3). The ECS ID is assigned when the Port assignments are made in the MHOSTIF.SYS file. (See Section 2.0).

The 'Engine' command allows the USER to select the default ECS ID. The ECS ID appears on the screen in the Title line (refer to Para. 3.1.1). Screens can be created which will display data for the default ESC. By sequencing through ESC ID's using the 'Engine' command, data then can be displayed for a series of ECS's using the same screen.

```
OPERATOR MENU   Dump   Engine   Help   P/V   Screen   Setpoint   System   Quit
Change default engine
```

When the 'Engine' command is issued, the following prompt is displayed in the menu area.

```
Use the UP/DOWN arrow keys to select the new Engine ID
Press 'Enter' when done.
```

The ID changes to the next ID by pressing the DOWN key and to the previous ID by pressing the UP key. When the 'Enter' key is pressed, the new ECS ID is set and the 'OPERATOR MENU' reappears.

3.3.3 Help

The 'Help' command allows the USER to get information about error codes, including the meaning of an error code. When the 'Help' command is highlighted in the 'OPERATOR MENU', the second line of the menu reads as shown below. At the current time only the section on error codes is active. The engine parameters section will be added as a future enhancement.

```
OPERATOR MENU   Dump   Engine   Help   P/V   Screen   Setpoint   System   Quit
Display HELP information about error codes or parameters.                <MENU>
```

3.3.3.1 *Errors (Help)*

When the 'Help' command is issued, the 'HELP MENU' appears.

```
HELP MENU   Errors   Parameters   Exit
Display help information for Error Code.
```

When the 'Errors' command is issued, the USER is prompted to enter the error code for which information is needed:

```
Enter Error Code number [, optional Engine ID]
> _
```

When the Error Code is typed in and the 'Enter' key is pressed, MHOSTIF searches for the HELP files in the directory specified in the MHOSTIF.SYS 'PORT' command for the current ECS.

The description of the error code is then displayed in the Body.

```
Press 'Enter' when done with HELP information.
```

Help information can be displayed for ECS's other than the default ECS by including the desired ECS ID after the error code as shown below.

```
Enter Error Code number [, optional Engine ID]
> 201,901_
```

This would display information about error code 201 for ECS ID 901.

Figure 3-8 illustrates a typical Error Code Screen. The screen displays both a description of the Error Code and a suggested corrective action.

When the USER is done with the Error Code information displayed, the 'Enter' key is pressed and the 'HELP MENU' reappears.

NOTE

The Error Code Help file may be edited by the user. The edits might include specific instructions for the operator, or information specific to a particular site or engine. The Help file format is discussed in Para. 4.1.2.

3.3.3.2 *Parameters (Help)*

```
HELP MENU          Errors    Parameters    Exit
Display help information for Parameter.
```

This feature is not active. It will be added as a future enhancement.

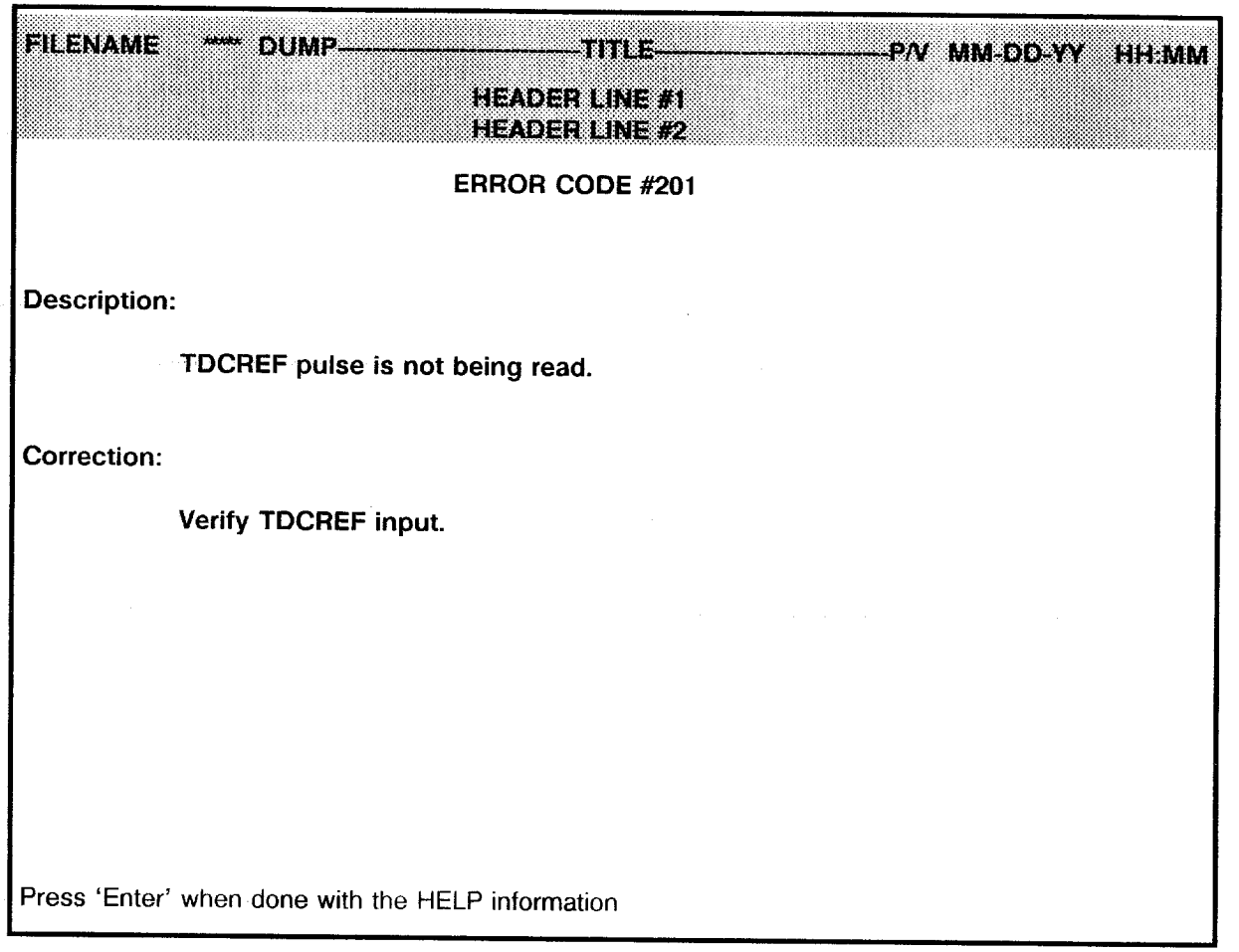


Figure 3-8
Example of Error Code HELP Screen

3.3.3.3 *Exit (Help)*

The 'Exit' command allows the USER to return to the 'OPERATOR MENU'.

```
HELP MENU          Errors    Parameters    Exit
Return to the OPERATOR menu.
```

When the 'Exit' command is issued, the 'OPERATOR MENU' appears.

3.3.4 P/V

The 'P/V' command allows the USER to collect compressor Pressure/Volume data on demand from a PV equipped ECS. Each data collection cycle consists of 360 data points for a single compressor cylinder end. Unlike the 'DUMP' feature, each data collection cycle must be prompted by the USER from the Host Computer keyboard.

```
OPERATOR MENU  Dump  Engine  Help  P/V  Screen  Setpoint  System  Quit
Read Pressure/Volume data from reciprocating compressor
```

When the 'P/V' command is issued, the USER is prompted to specify the compressor end from which to collect data ('xx' represents the maximum number of cylinder ends configured by the user).

```
Read Pressure/Volume for which compressor end (00 to xx): _
```

When the compressor end information is entered and the 'Enter' key is pressed, the USER is then prompted to specify the file name to which the data is saved. A directory of existing files is given to allow the USER to write over an existing file. See Figure 3-9.

The USER can either enter the name of a new P/V data file or select an existing P/V data file from the list (highlight the desired P/V data file name using the cursor control keys, then press the 'Enter' key).

The file PVxxxxyy is given as a default. This file is made from the current ECS ID ('xxxx') and the requested compressor end ('yy').

MHOSTIF then proceeds to acquire the P/V data for that compressor end and place the data in the specified file. If this is the first time that a P/V data acquisition is to take place, MHOSTIF first acquires the fraction of stroke table from the P/V subsystem. MHOSTIF displays the progress of the data acquisition as it acquires 360 pressure points.

Fraction of stroke tables are stored in the C:\MHOSTIF\FSTROKE directory and Pressure/Volume data files are stored in the C:\MHOSTIF\PV directory.

The P/V indicator on the TITLE/STATUS line flashes to indicate that MHOSTIF is in the process of collecting pressure/volume data. When the data has been collected, the 'OPERATOR MENU' reappears.

```
FILENAME  **** DUMP----------TITLE----------P/V MM-DD-YY HH:MM
                    HEADER LINE #1
                    HEADER LINE #2

                  P/V FILE DIRECTORY

File01          File19
File02          File20
File03          File21
File04          File22
File05          File23
File06
File07
File08
File09
File10
File11
File12
File13
File14
File15
File16
File17
File18

Use the cursor control keys to select a file
Press 'Enter' to select a highlighted file OR type a P/V file name: _
```

Figure 3-9
Example of P/V FILE DIRECTORY

3.3.5 Screen

The 'Screen' command allows the USER to change the current display screen to a new display screen.

```
OPERATOR MENU  Dump  Engine  Help  P/V  Screen  Setpoint  System  Quit
Selection of a Display Screen
```

When the 'Screen' command is issued, a directory of the available display screens (DISPLAY SCREEN FILE DIRECTORY) is presented to the USER. The USER is prompted to enter the display screen name. See Figure 3-10.

The USER uses the cursor controls keys to highlight the desired display screen name. When the 'Enter' key is pressed, the selected Screen is displayed in the Body and the 'OPERATOR MENU' reappears.

The 'DISPLAY SCREEN FILE DIRECTORY' lists every screen previously created with the 'Edit Screen' command under the 'SYSTEM MENU.' (Refer to Para. 3.3.7.) The USER is provided with a set of generic screens on the MHOSTIF Utility disk. The 'DISPLAY SCREEN FILE DIRECTORY' lists only the generic screens until additional screens are created by the USER. The User's Manual for the ECS shows the generic screens provided.

3.3.6 Setpoint

The 'Setpoint' command allows the USER to change an ECS setpoint.

```
OPERATOR MENU  Dump  Engine  Help  P/V  Screen  Setpoint  System  Quit
Change the value of a SETPOINT parameter
```

When the 'Setpoint' command is issued, the USER is prompted to enter the name of the setpoint to change.

```
Enter SETPOINT name [, optional Engine ID]
> _
```

The Name of the setpoint must be the software name as it appears in the \MHOSTIF\SETPOINT file. To change a setpoint for an ECS other than the default ECS shown in the Header, the entry format is setpoint name, comma (,), then the ECS ID.

The USER is prompted to enter the new setpoint as the current setpoint for the ECS ID is displayed.

```
The current    value of SPDREQMIN,1: 250.0          Press ESC to abort
Enter the new  value for SPDREQMIN,1:
```

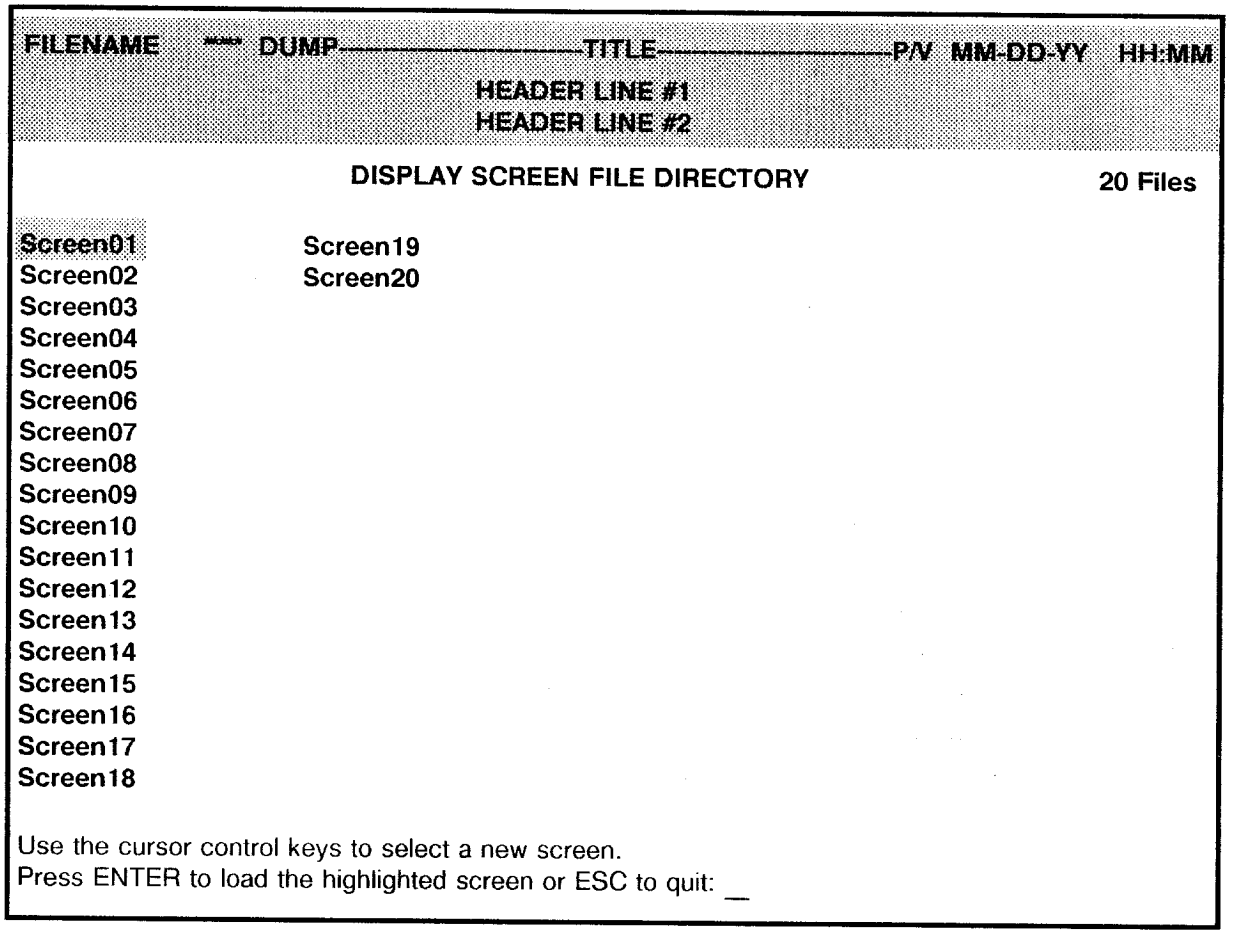


Figure 3-10
Example of DISPLAY SCREEN FILE DIRECTORY

Pressing the 'ESC' key before entering a new setpoint aborts the command. The setpoint remains unchanged and the 'OPERATOR MENU' reappears.

Pressing the 'Enter' key after entering a new setpoint value changes the setpoint value and the 'OPERATOR MENU' reappears.

CAUTION

1. Use extreme caution when changing setpoints to prevent engine shutdown/ damage.
2. In order to maintain a record of setpoints, the USER should change the applicable \MHOSTIF\SETPOINT file to reflect each new setpoint entered through the keyboard with the 'Setpoint' command. If the file is not updated, then setpoints can be read only by using the 'Setpoint' command on a setpoint by setpoint basis. Further, if the file is not updated, then it cannot be used for a batch download of setpoints. (Refer to Para. 3.3.7.1.4).

3.3.7 System

The 'System' command allows the USER to access administrative level functions.

```
OPERATOR MENU   Dump   Engine   Help   P/V   Screen   Setpoint   System   Quit
System administration                                              <MENU>
```

When the 'System' command is issued, the USER is prompted to enter a Password.

```
Password required for System Administration
Enter Password> _
```

The USER must type the Password, as it is defined in the MHOSTIF.SYS file, and then press the 'Enter' key. If the USER enters an incorrect Password, the USER is placed back into the 'OPERATOR MENU.' If the Password is entered correctly, the 'SYSTEM MENU' appears.

```
SYSTEM MENU          Comm          Edit          Exit
Edit the HEADER or a Display Screen                    <MENU>
```

3.3.7.1 *Comm (System)*

The 'Comm' command allows the USER to change the baud rate of the communication ports, download configuration files, download setpoint files, upload configuration files, and select the default ECS for any of the above.

SYSTEM MENU	Comm	Edit	Exit	
Display/Change COMM port settings				<MENU>

When the 'Comm' command is issued, the USER is presented with the 'COMM MENU' and 'COMM STATUS' screen. See Figure 3-11.

3.3.7.1.1 *Baud (System, Comm)*

The 'Baud' command allows the USER to change the communication baud rate with the default ECS (determined by the default "Engine ID").

COMM MENU	Baud	Configuration	Engine	Setpoint	Upload	Exit
Change the comm. baud rate with the default ECS determined by engine ID						<MENU>

The USER is prompted to enter the new desired baud rate as follows:

COMM MENU, Baud Rate	300	600	1200	2400	4800	9600	Exit
Change the comm. baud rate with the default ECS to 1200 Baud							

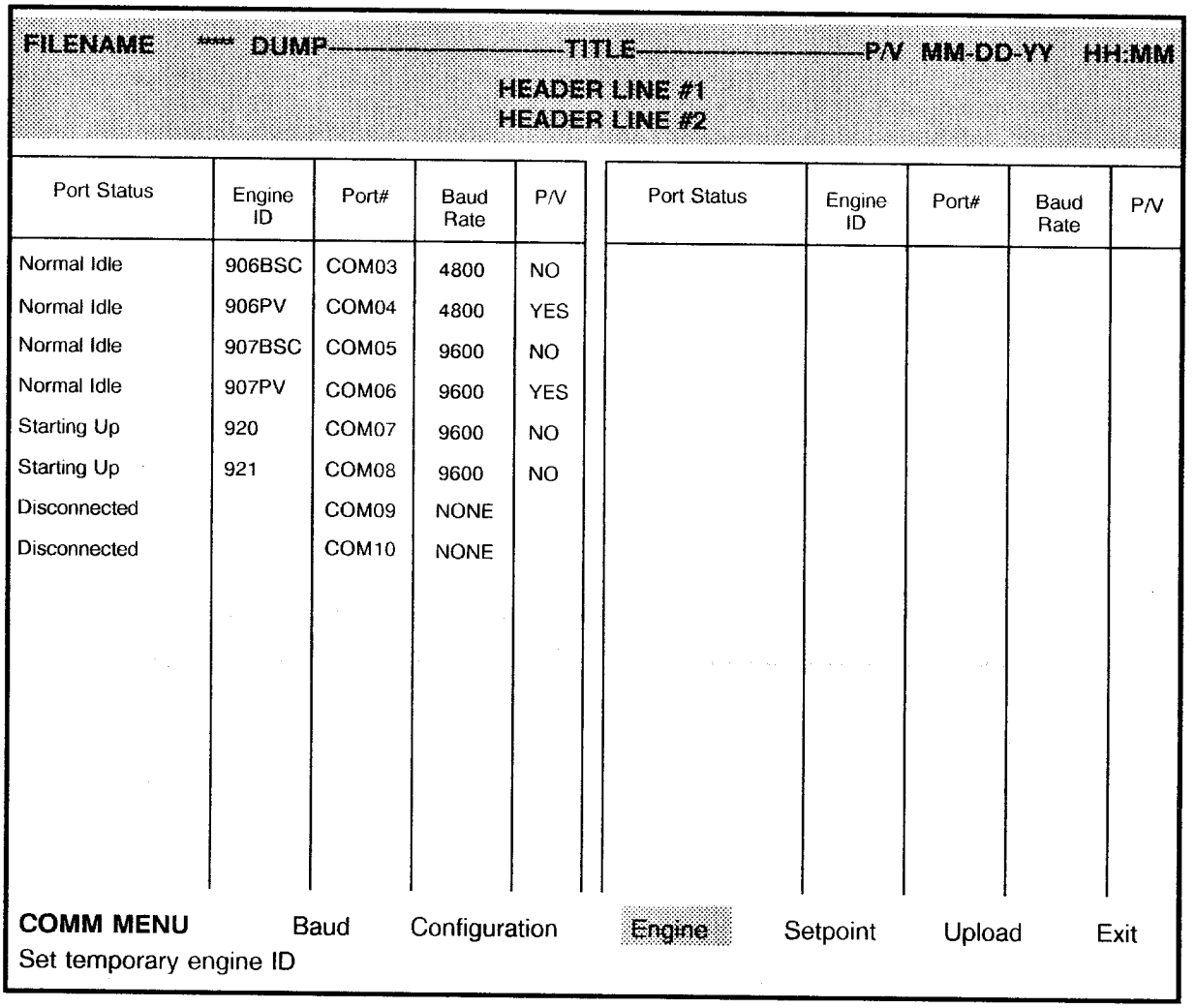
When the 'Enter' key is pressed, the highlighted baud rate is set and the 'COMM MENU' reappears.

When an ECS is started from a cold start, the Host Computer automatically sets the baud rate at 300. If the baud rate is subsequently changed using the 'Baud' command, then that baud rate is maintained for subsequent warm starts. The terms 'cold start' and 'warm start' are defined in the ECS User's Manual.

3.3.7.1.2 *Configuration (System, Comm)*

The 'Configuration' command allows the USER to send the ECS configuration file from the comm port line in MHOSTIF.SYS to the default ECS (determined by the default ECS ID).

COMM MENU	Baud	Configuration	Engine	Setpoint	Upload	Exit
Send the CONFIGURATION file to the default ECS determined by engine ID						



Refer to Para. 3.3 for a description of the elements of the screen.

Figure 3-11
COMM STATUS Screen

When the 'Configuration' command is issued, MHOSTIF starts downloading the assigned configuration file to the default ECS as the following message appears in the menu section. The assigned configuration file is defined in the MHOSTIF.SYS file

```
Downloading Configuration file <xxxx> to engine <yyyy>          Press ESC to abort
DOWNLOADING CONFIGURATION PARAMETERS                                Line #zzzz
```

Where 'xxxx' is the file name of the file being downloaded, 'yyyy' is the ID of the ECS that the file is being downloaded to and 'zzzz' is the current line number in the configuration file that is being sent to the ECS.

When the 'ESC' key is pressed while a download is in process, the download is aborted. A new download must then be accomplished before operating the ECS.

When the download is completed, the 'COMM MENU' reappears.

NOTE

MHOSTIF does not permit configuration downloading when the ECS is in control. For ECS's which provide supervisory control, download is not permitted unless the ECS is in the Monitor mode. For ECS's which provide full authority control, download is not permitted unless the engine is shut down.

3.3.7.1.3 *Engine (System, Comm)*

The 'Engine' command allows the USER to change the default ECS ID. This ECS ID is used for changing the baud rate, downloading the configuration and setpoint files and uploading a configuration file.

```
COMM MENU    Baud    Configuration    Engine    Setpoint    Upload    Exit
Set temporary engine ID
```

When the 'Engine' command is issued, the USER is prompted to select the new ID.

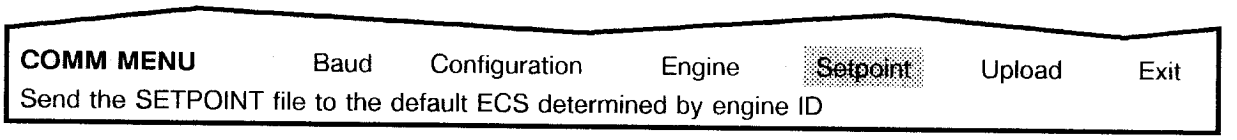
```
Use the UP/DOWN arrow keys to select the new engine ID.
Press 'Enter' when done.
```

When the 'Enter' key is pressed, the new ECS ID is set, and the 'COMM MENU' reappears.

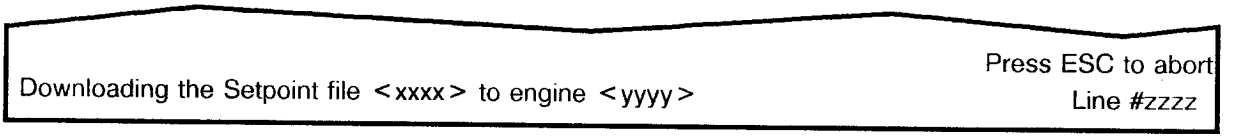
The ECS ID originally selected using the 'Engine' command in the 'OPERATOR MENU' is restored upon exiting from the 'COMM MENU'.

3.3.7.1.4 *Setpoints (System, Comm)*

The 'Setpoints' command allows the USER to send the setpoint file to the default ECS (determined by the default ECS ID). This command provides an efficient method for initializing an ECS and for changing many setpoints at one time. The 'Setpoint' command in the 'OPERATOR MENU' can be used to change setpoints one at a time.



When the 'Setpoint' command is issued, MHOSTIF starts downloading the assigned setpoint file (as defined in the MHOSTIF.SYS file) to the default ECS as the following message appears in the menu section.



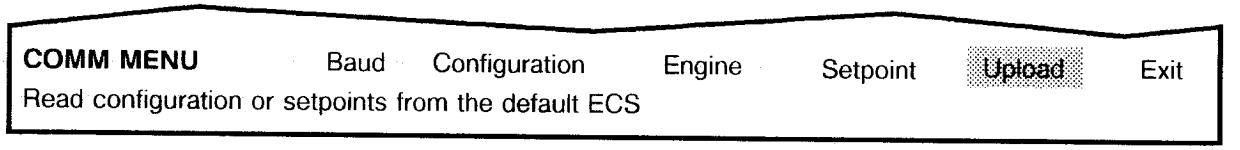
Where 'xxxx' is the file name of the file being download, 'yyyy' is the ID of the ECS to which the file is being downloaded and 'zzzz' is the current line number in the setpoint file that is being sent to the ECS.

When the 'ESC' key is pressed while a download is in process, the download is aborted. A new download must then be accomplished before operating the ECS.

When the download is complete, the 'COMM MENU' reappears.

3.3.7.1.5 *Upload (System, Comm)*

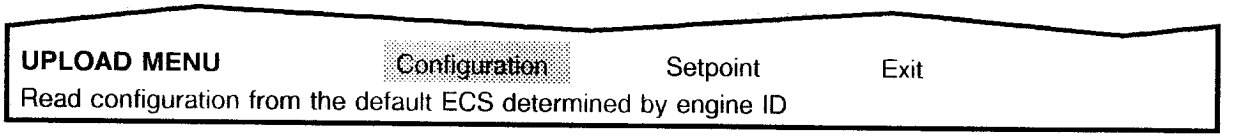
The 'Upload' command allows the USER to read the current configuration file from an ECS. (The setpoint upload feature is not active)



When the 'Upload' command is issued, the 'UPLOAD MENU' appears.

3.3.7.1.5.1 *Configuration (System, Comm, Upload)*

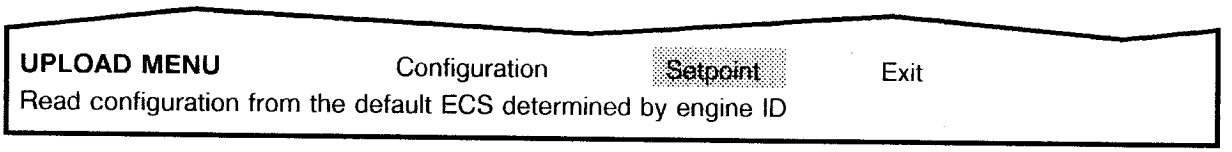
The 'Configuration' command allows the USER to upload a configuration file.



When the 'Configuration' command is issued, MHOSTIF starts the upload of the configuration file. The uploaded file has the same name as the configuration download file except that it has a '.CUF' file extension and is stored in the directory specified by the **'PATH UPLOAD = ?????'** command in the MHOSTIF.SYS file.

When the upload is completed, the 'COMM MENU' appears.

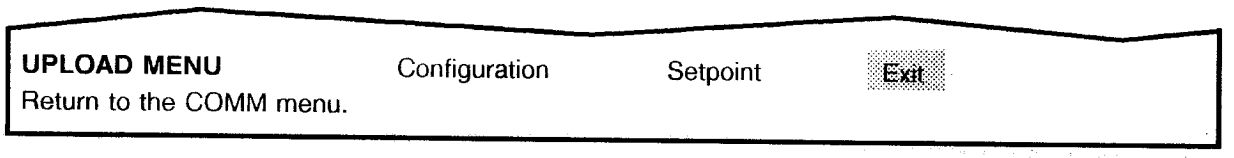
3.3.7.1.5.2 *Setpoint (System, Comm, Upload)*



This feature of MHOSTIF is not active. It will be added as a future enhancement.

3.3.7.1.5.3 *Exit (System, Comm, Upload)*

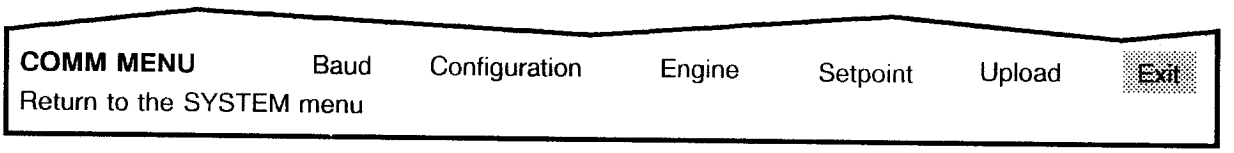
The 'Exit' command allows the USER to return to the 'COMM MENU.'



When the 'Exit' command is issued, the 'COMM MENU' reappears.

3.3.7.1.6 *Exit (System, Comm)*

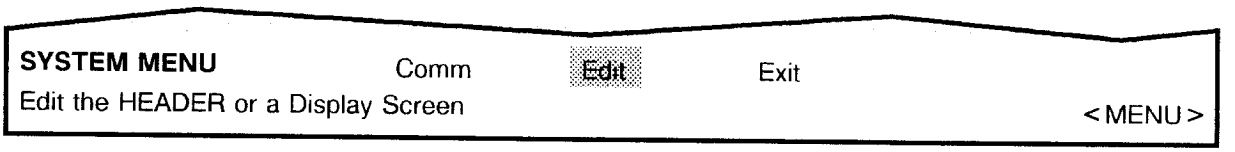
The 'Exit' command allows the USER to return to the 'SYSTEM MENU'.



When the 'Exit' command is issued the 'SYSTEM MENU' appears.

3.3.7.2 *Edit (System)*

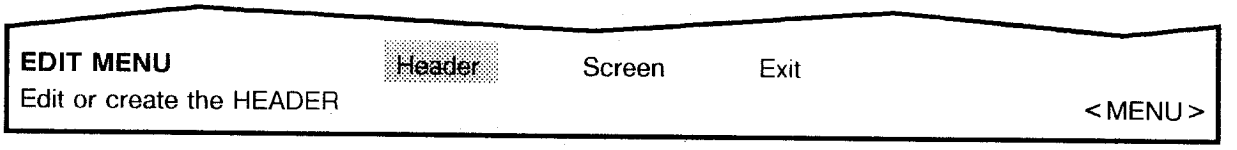
The 'Edit' command allows the USER to enter the 'EDIT MENU' to create or change the Header and display Screens.



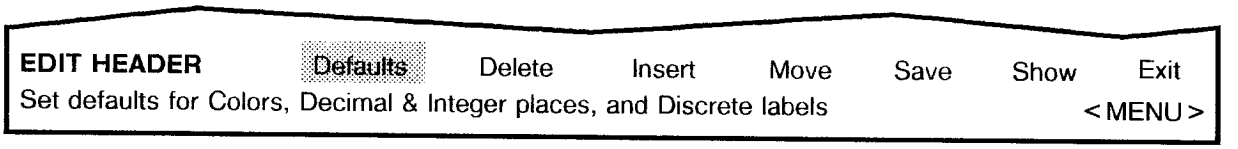
When the 'Edit' command is issued, the 'EDIT MENU' appears.

3.3.7.2.1 *Header (System, Edit)*

The 'Header' command allows the USER to edit the HEADER.



When the 'Header' command is issued, the 'EDIT HEADER' menu appears.



Each of the commands in the 'EDIT HEADER' menu is identical to the corresponding command with the same name in the 'EDIT SCREEN' menu which is covered in Para. 3.3.7.2.2. Consequently, these commands will not be discussed separately in this section. When editing a header, simply read 'Header' for 'Screen' in Para. 3.3.7.2.2.

The only difference between the 'EDIT HEADER' and 'EDIT SCREEN' menus is that when the 'Screen' command is issued, the USER is first prompted to select the screen to be edited. No such selection is requested when the 'Header' command is issued, because there is only one Header.

3.3.7.2.2 *Screen (System, Edit)*

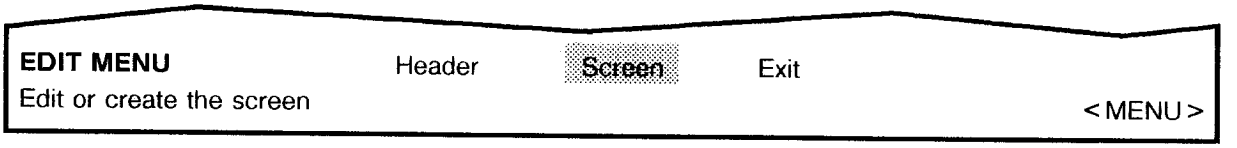
In the discussion, the term "CELL" is used. The term CELL applies to both the Header and the Screen Body (see Figure 3-1).

A CELL is a location on the screen that holds either Text or a Parameter value. The height of a CELL is always 1 character while the width varies depending of the type of CELL (Text or Parameter).

Two Text CELLS are highlighted in the Body in Figure 3-12, one starting at Row 3, Column 0, the other starting at Row 11, Column 25.

Four Parameter CELLS are highlighted in the Body in Figure 3-13. Note that a Text CELL has been created adjacent to each Parameter CELL describing the contents of the Parameter CELL.

The 'Screen' command allows the USER to edit a display screen.



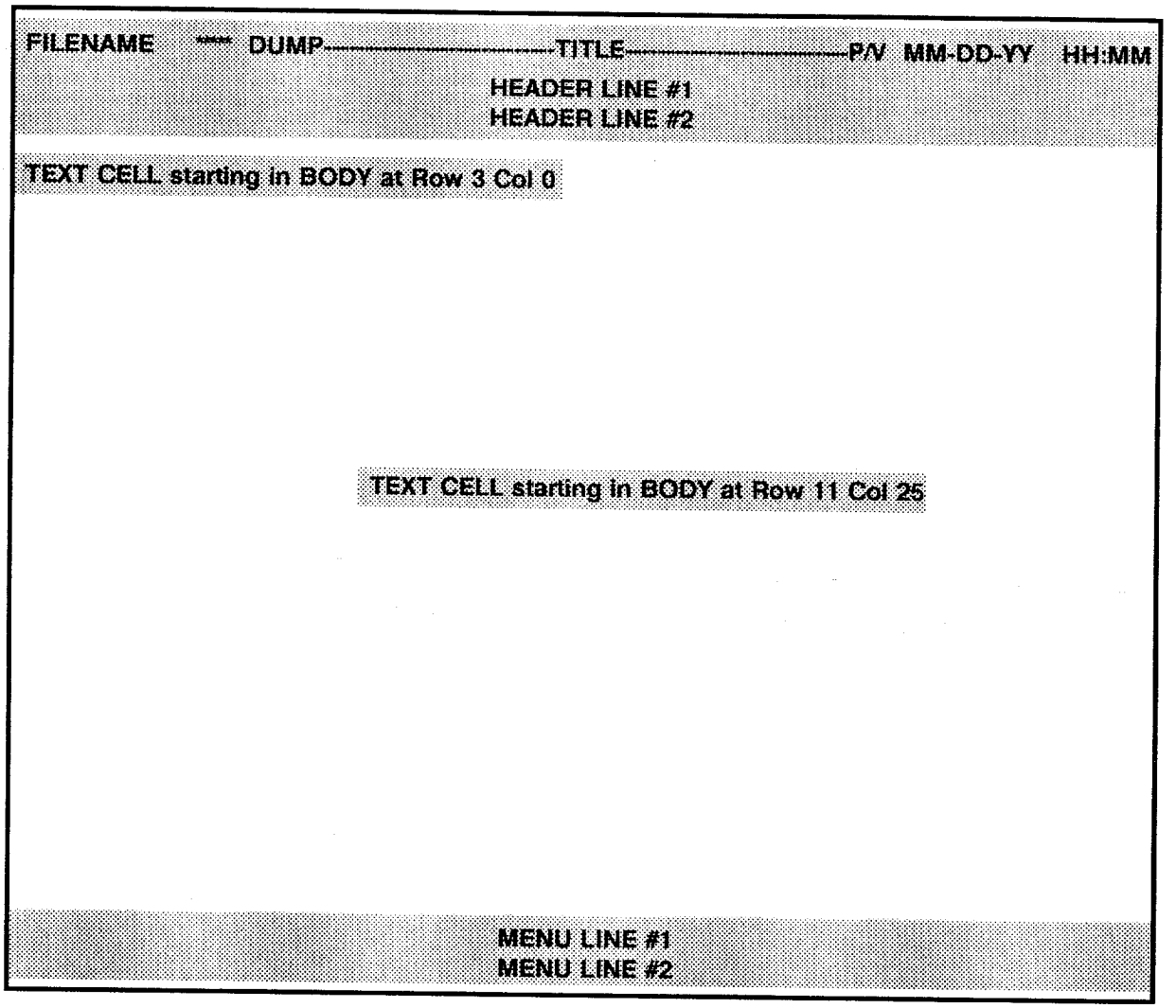


Figure 3-12
Illustration of Text CELLS

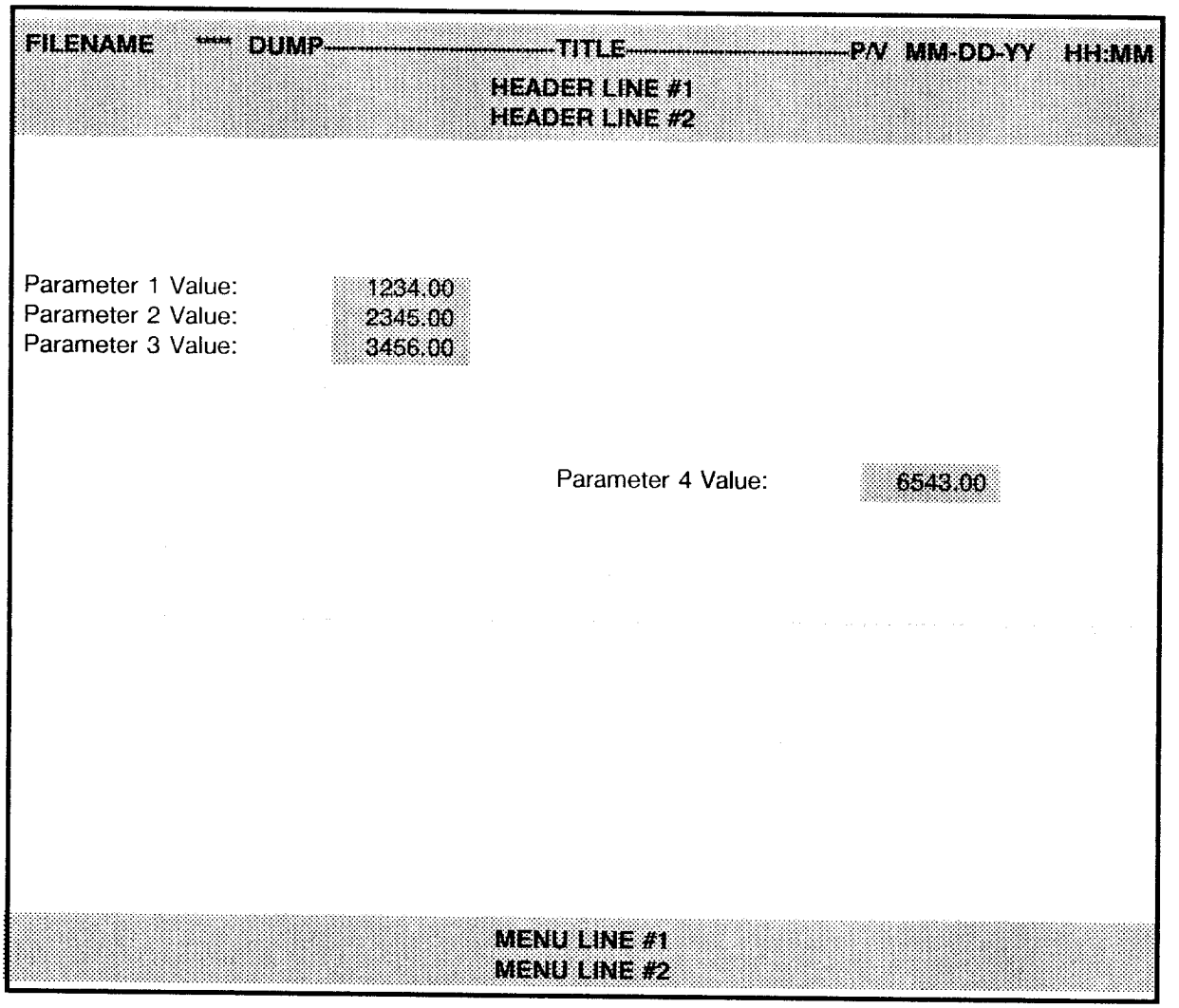


Figure 3-13
Illustration of Parameter CELLS

When the 'Screen' command is issued, the USER is given a list of all existing display screens. See Figure 3-14. The USER is prompted to use the cursor control keys to highlight the name of the display screen to be edited or to type in the screen name. When the 'Enter' key is pressed, the selected display screen's name appears in the 'FILENAME' field on the 'TITLE' line of the screen, the selected display screen appears in the Body, and the 'EDIT SCREEN' menu will appear.

If a new display screen, either for purposes of display or DUMP (Refer to Para. 3.4.2) is required, the USER types in the file name of the new display screen. When the 'Enter' key is then pressed, the USER is presented with a blank Body, the file name of the new display screen appears in the 'FILENAME' field on the 'TITLE' line of the screen, and the 'EDIT SCREEN' menu appears.

EDIT SCREEN Defaults Delete Insert Move Save Show Exit
Set defaults for Colors, Decimal & Integer places, and Discrete labels <MENU>

3.3.7.2.2.1 *Defaults (System, Edit, Screen)*

The 'Defaults' command allows the USER to select the default conditions for CELLS: foreground and background colors, the number of decimals and integers used for analog parameters display, and the way in which discrete parameters are displayed. After the defaults are set, all CELLS created thereafter have the same defaults until new defaults are set. If so desired, each CELL can be created with its own unique defaults.

When the 'Defaults' command is issued, the 'EDIT SCREEN, DEFAULTS' menu appears.

EDIT SCREEN, DEFAULTS Colors Decimals Discrete Integer Exit
Set the foreground & background colors for a CELL

3.3.7.2.2.1.1 *Colors (System, Edit, Screen, Defaults)*

The 'Colors' command enables the USER to select the foreground and background colors for a CELL or CELLS. The foreground color is the color with which text or a parameter will be displayed. The background color is the color of the background in the CELL.

When the 'Colors' command is issued, the USER is prompted to use the cursor control keys to select foreground and background colors.

Use UP/DOWN arrows to change the foreground color. **CURRENT COLOR SETTINGS**
Use LEFT/RIGHT arrows to change the background color. Press 'Enter' when done.

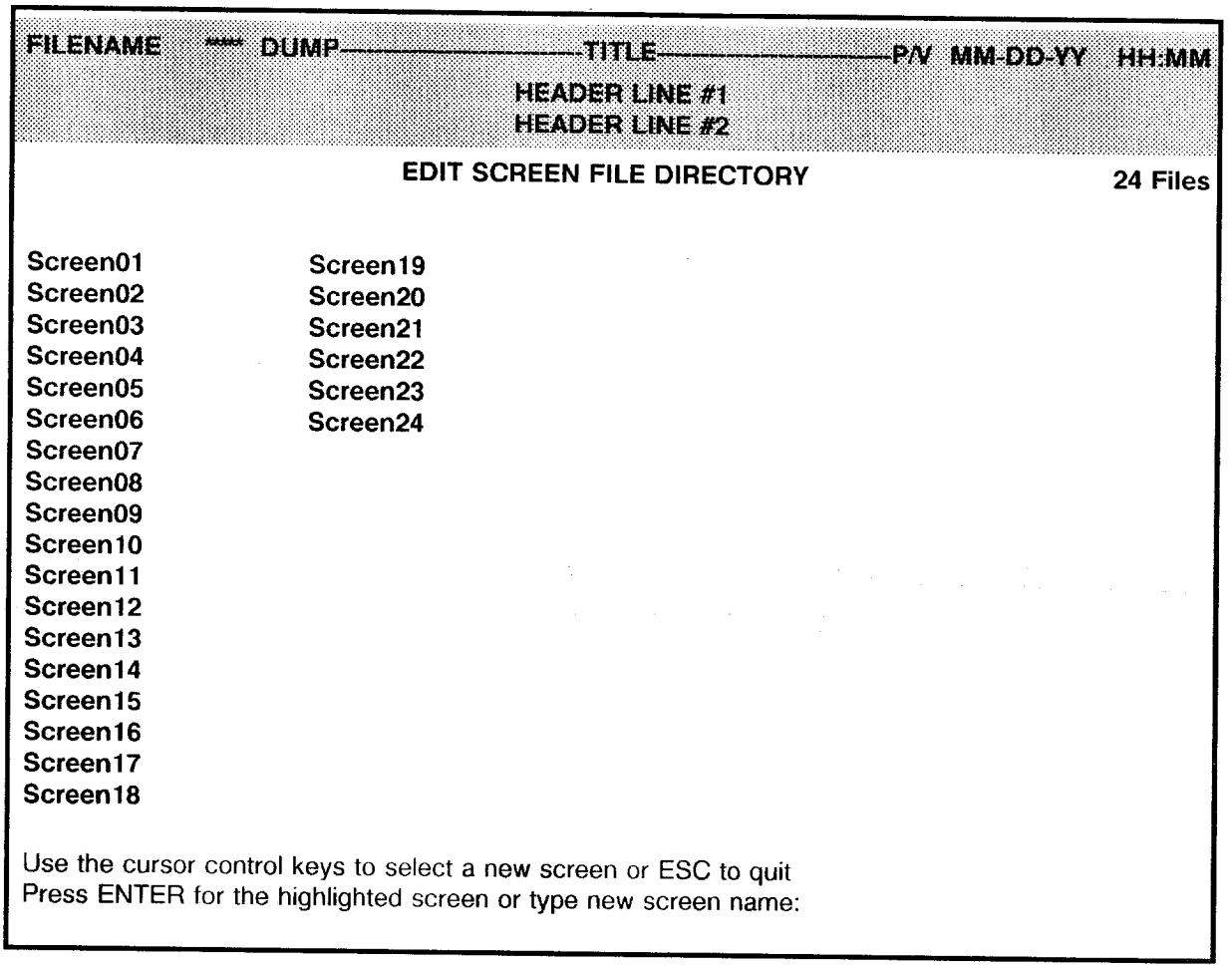
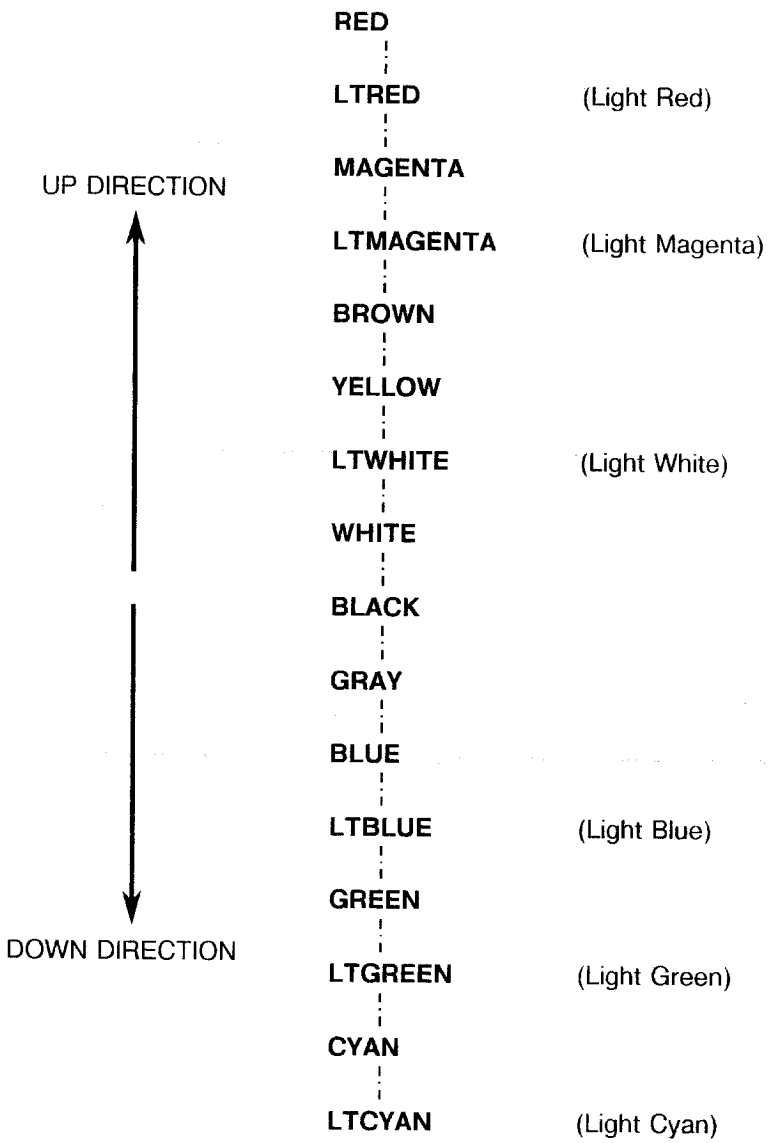
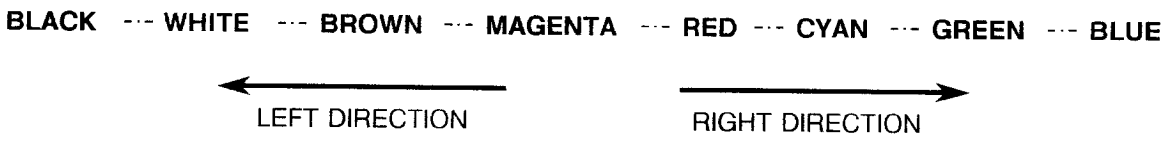


Figure 3-14
EDIT SCREEN FILE DIRECTORY

The UP/DOWN arrow keys control the foreground colors. Pressing the UP or DOWN arrow key in succession selects a color as shown below:



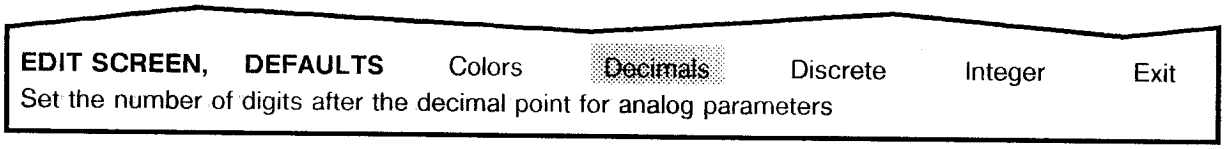
The LEFT/RIGHT arrow keys control the background colors. Pressing the LEFT or RIGHT arrow key in succession selects a color as shown below:



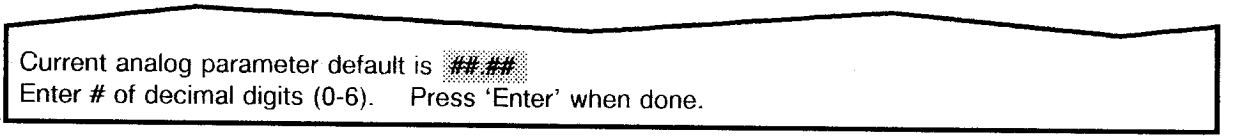
When the 'Enter' key is pressed, the default colors are set and the 'EDIT SCREEN, DEFAULTS' menu reappears.

3.3.7.2.2.1.2 *Decimals (System, Edit, Screen, Defaults)*

The 'Decimals' command allows the USER to select the number of decimal places to be displayed for an analog parameter.



When the 'Decimals' command is issued, the USER is prompted to enter the desired number of digits to appear after the decimal point. This default affects analog parameters only. All analog parameters inserted from then on assume this default until a new 'Decimals' default is set.

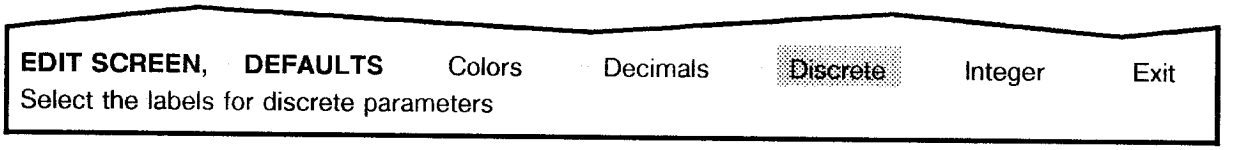


Pressing a digit from 0 to 6 changes the number of places for the fractional part of an analog number. Pressing the 'Enter' key sets the 'Decimal' default and the 'EDIT SCREEN, DEFAULTS' menu reappears.

Do not use more decimal digits than are necessary to display significant data. For example, there is no utility in displaying RPM to more than one decimal digit. Extraneous decimal digits make the screen difficult to read and tend to mask the significant data.

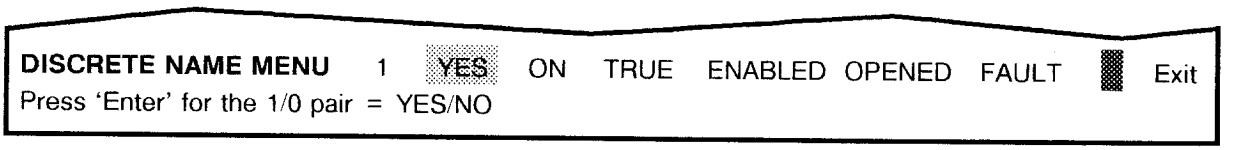
3.3.7.2.2.1.3 *Discrete (System, Edit, Screen, Defaults)*

The 'Discrete' command allows the USER to select the way a discrete parameter is displayed.



Discrete parameters can only have two states, 1 or 0. MHOSTIF permits display of discrete parameters in more descriptive ways.

When the 'Discrete' command is issued, the 'DISCRETE NAME MENU' appears.



The choices are

Menu Choice	Display For State "1"	For State "0"
1	YES	NO
ON	ON	OFF
TRUE	TRUE	FALSE
ENABLED	ENABLED	DISABLED
OPEN	OPENED	CLOSED
FAULT	FAULT	NO FAULT
▓	Foreground color	Background Color

The last choice is useful for discrete parameters such as warnings or alarms. Typically, the foreground color (warning on) is set for the default color red or yellow and the background color (warning off) is set for the default color green. Colors are selected under the 'Color' command in the 'EDIT SCREEN, DEFAULTS' menu.

When the 'Enter' key is pressed, the default is set to the highlighted choice and the 'EDIT SCREEN, DEFAULTS' menu reappears. When the 'Exit' command is issued, the discrete default remains unchanged and the 'EDIT SCREEN, DEFAULTS' menu reappears.

3.3.7.2.2.1.4 *Integer (System, Edit, Screen, Defaults)*

The 'Integer' command allows the USER to select the number of integers to be displayed for an analog parameter.

```
EDIT SCREEN,  DEFAULTS     Colors     Decimals     Discrete     Integer     Exit
Set the number of digits before the decimal point for analog parameters
```

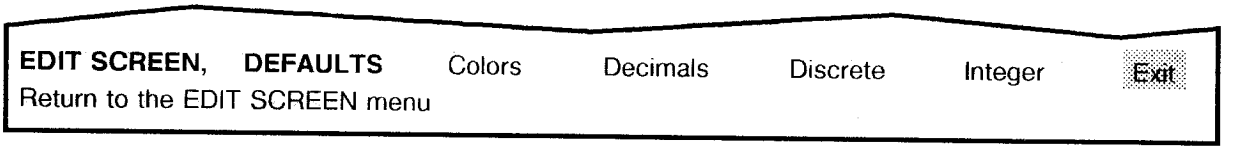
When the 'Integer' command is issued, the USER is prompted to enter the desired number of digits to appear before the decimal point. This default affects analog parameters only. All analog parameters inserted from then on assume this default until a new 'Integer' default is set.

```
Current analog parameter default is ## ##
Enter number of digits before decimal point (1-9).   Press 'Enter' when done.
```

Pressing a digit from 1 to 9 changes the number of places making up the integer portion of an analog number. Pressing the 'Enter' key sets the 'Integer' default and the 'EDIT SCREEN, DEFAULTS' menu reappears.

3.3.7.2.2.1.5 *Exit (System, Edit, Screen, Defaults)*

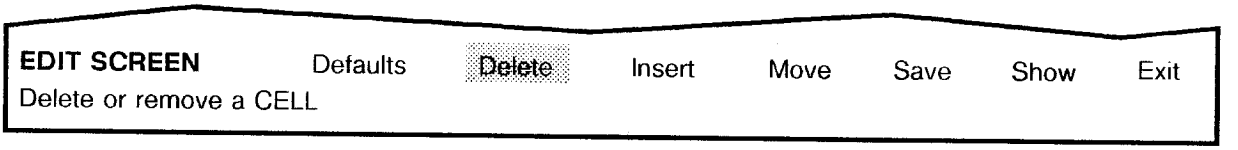
The 'Exit' command allows the USER to return to the 'EDIT SCREEN' menu.



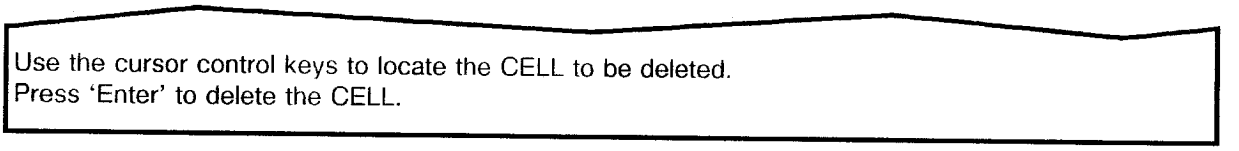
When the 'Exit' command is issued, the 'EDIT SCREEN' menu appears.

3.3.7.2.2.2 *Delete (System, Edit, Screen)*

The 'Delete' command allows the USER to delete a CELL.

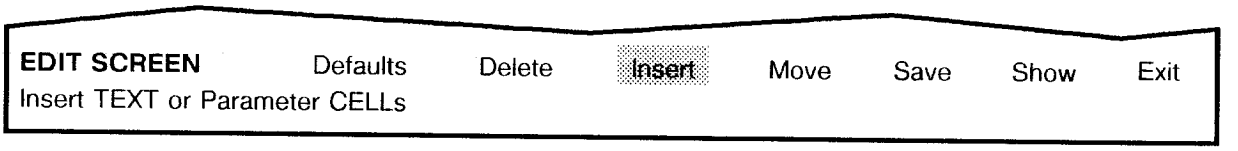


When the 'Delete' command is issued, a CELL blinks, indicating the position of the cursor. The USER is prompted to select the cell to be deleted.



Pressing the 'Enter' key deletes the blinking CELL and the 'EDIT SCREEN' menu reappears.

3.3.7.2.2.3 *Insert (System, Edit, Screen)*



The 'Insert' command allows the USER to insert a CELL into the current screen. There are three types of CELLS:

1) Analog CELLS to display parameters that can take integer or floating point decimal values.
2) Discrete CELLS to display discrete parameters.
3) Text CELLS to display comments, labels, or graphics.

When the 'Insert' command is issued, the 'EDIT SCREEN, INSERT' menu appears:

```
EDIT SCREEN,  INSERT        Analog        Discrete        Text        Exit
Insert analog parameter CELL
```

3.3.7.2.2.3.1 *Analog (System, Edit, Screen, Insert)*

The 'Analog' command allows the USER to insert an analog parameter onto the screen.

When the 'Analog' command is issued, a blinking place holder (#####.##) appears on the screen to show how much space the parameter will use based upon the defaults set for decimals and integers. The USER is prompted to locate the position of the new parameter with the cursor or control keys.

```
Use the cursor control keys to locate the position of the new parameter
Press 'Enter' to set the location of the parameter.
```

When the 'Enter' key is pressed, the location for the Parameter is set, and the USER is prompted to enter the name of the parameter.

```
Enter the name of the ECS parameter [, optional engine ID]
>_
```

The USER enters the name of the parameter to display. The parameter must be entered using the proper software parameter name. See the Reference Manual of the ECS for the applicable parameter index. The default ECS ID is assumed unless the USER specifies another ECS ID. The ECS ID is entered by placing a comma (,) after the parameter followed by the ECS ID.

When the 'Enter' key is pressed, the parameter typed in is entered into the location selected and the 'EDIT SCREEN, INSERT' menu reappears.

3.3.7.2.2.3.2 *Discrete (System, Edit, Screen, Insert)*

The 'Discrete' command allows the USER to insert a discrete parameter onto the screen.

```
EDIT SCREEN,  INSERT        Analog        Discrete        Text        Exit
Insert discrete parameter CELL
```

When the 'Discrete' command is issued, a blinking place holder appears to show how much space the parameter will use. The USER is prompted to locate the position of the new parameter as follows:

```
Use the cursor control keys to locate the position of the new parameter
Press 'Enter' to set the location of the parameter.
```

When the 'Enter' key is pressed, the location for the Parameter is set, and the USER is prompted to enter the name of the parameter.

```
Enter the name of the ECS parameter [, optional engine ID]
>_
```

The USER enters the name of the parameter to display. The parameter must be entered using the proper parameter software name. Refer to the Reference Manual of the ECS for the applicable parameter index.

The default ECS ID is assumed unless the USER specifies another ECS ID. The ECS ID is entered by placing a comma (,) after the parameter name followed by the ECS ID.

When the 'Enter' key is pressed, the parameter typed in is entered into the location selected and the 'EDIT SCREEN, INSERT' menu reappears.

3.3.7.2.2.3.3 *Text (System, Edit, Screen, Insert)*

The 'Text' command allows the USER to insert text comments onto the screen to clarify its contents.

```
EDIT SCREEN,  INSERT        Analog      Discrete      Text      Exit
Insert TEXT CELL
```

When the 'Text' command is issued, a blinking cursor (_) appears to show the position of the beginning of the Text to insert. The USER can position the beginning of the Text using the cursor control keys. The USER can enter Text and reposition the Text at will using the cursor control keys as the Text is being typed.

```
Use the cursor control keys to locate the position of the TEXT
Enter TEXT.  Press 'Enter' to set the location of the TEXT.
```

The USER also can enter any of the ASCII graphic symbols shown in Appendix A by holding down the 'Control' key and entering the three digits shown in Appendix A for the symbol required.

When the 'Enter' key is pressed, the Text typed in is entered into the location selected and the 'EDIT SCREEN, INSERT' menu reappears.

3.3.7.2.2.3.4 *Exit (System, Edit, Screen, Insert)*

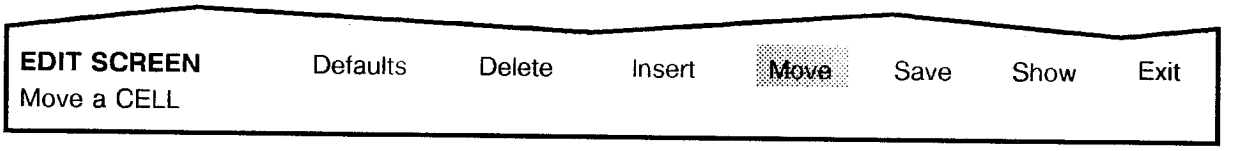
The 'Exit' command allows the USER to return to the 'EDIT SCREEN' menu.

```
EDIT SCREEN,  INSERT        Analog      Discrete      Text      Exit
Return to the EDIT SCREEN menu
```

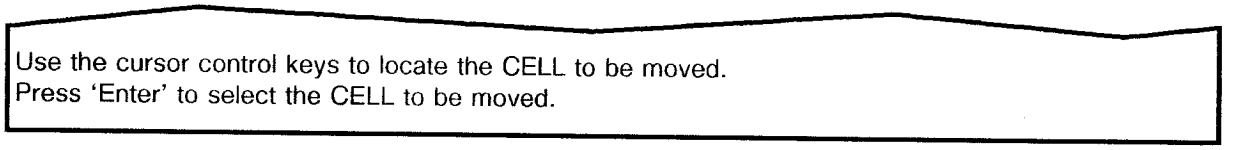
When the 'Exit' command is issued, the 'EDIT SCREEN' menu appears.

3.3.7.2.2.4 *Move (System, Edit, Screen)*

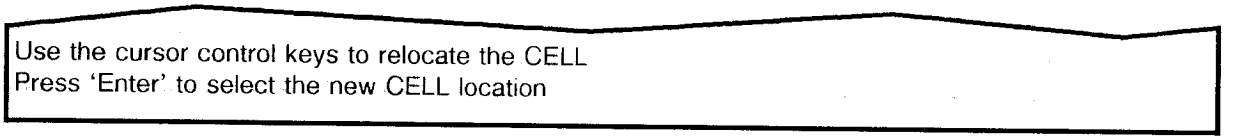
The 'Move' command allows the USER to change the position of an existing CELL on the Display Screen.



When the 'Move' command is issued, a CELL blinks, indicating the position of the cursor. The user is prompted to select the CELL to be moved.



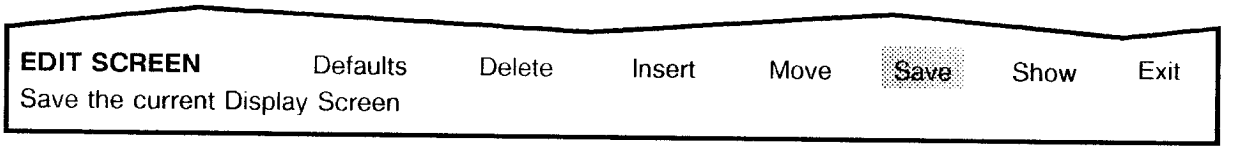
Pressing the 'Enter' key locks the cursor on the CELL to be moved (the blinking CELL). The USER is then prompted to use the cursor control keys to relocate the CELL.



When the 'Enter' key is pressed, the CELL is locked into the new location and the 'EDIT SCREEN' menu reappears.

3.3.7.2.2.5 *Save (System, Edit, Screen)*

The 'Save' command allows the USER to save the Display Screen being edited.



When the 'Save' command is issued, the contents of the screen as edited is saved.

CAUTION

If the 'Save' command is not issued before exiting the 'EDIT SCREEN' (or 'EDIT HEADER') menu, the new screen which has been created or the edits on a current screen will be lost.

3.3.7.2.2.6 *Show (System, Edit, Screen)*

The 'Show' command allows the USER to view the contents of a Display Screen CELL.

```
EDIT SCREEN    Defaults   Delete   Insert   Move   Save   Show   Exit
Show the contents of CELLs
```

When the 'Show' command is issued, a CELL blinks, indicating the CELL whose contents are being displayed and the position of the cursor. The contents of the CELL are displayed in the menu section of the screen.

If the blinking CELL is a TEXT CELL, the menu section displays the total number of characters used by the TEXT CELL as follows:

```
Use the cursor control keys to show contents of another CELL. 'Enter' when done.
TEXT CELL : Number of characters = xx
```

When the 'Enter' key is pressed, the 'EDIT SCREEN' menu reappears.

If the blinking CELL is an ANALOG PARAMETER CELL, the menu section displays the parameter name (with array member number, if applicable) and the ECS ID:

```
Use the cursor control keys to show contents of another CELL. 'Enter' when done.
ANALOG PARAMETER CELL : SPKMEAS.01, 901
```

If the CELL was created to display data from the default ECS, the word 'DEFAULT' appears after the parameter name. If the CELL was created to show data from a specific ECS, that ECS ID appears after the parameter name.

When the 'Enter' key is pressed, the 'EDIT SCREEN' menu reappears.

If the blinking CELL is a DISCRETE PARAMETER CELL, the menu section displays the parameter name, ECS ID, and the words used for the 1 and 0 discrete states:

```
Use the cursor control keys to show contents of another CELL. 'Enter' when done.
DISCRETE PARAMETER CELL : SPKEN, 901, ENABLED/DISABLED
```

If the CELL was created to display data from the default ECS, the word 'DEFAULT' appears after the parameter name. If the CELL was created to show data from a specific ECS, that ECS ID appears after the parameter name.

When the 'Enter' key is pressed, the 'EDIT SCREEN' menu reappears.

3.3.7.2.2.7 *Exit (System, Edit, Screen)*

The 'Exit' command effectively allows the USER to erase all the edits which have been made by returning to the 'EDIT' menu without saving the edits.

```
EDIT SCREEN        Defaults   Delete   Insert   Move   Save   Show   Exit
Return to the EDIT menu
```

When the 'Exit' command is issued, the USER is prompted to save the screen if edits have been made since the last save.

```
Warning: Changes have not been saved!
Are you sure you want to exit EDIT SCREEN (Y/N) ? : _
```

When 'N' is entered and the 'Enter' key is pressed, the 'EDIT SCREEN' menu reappears, giving the USER the opportunity to Save the edits. When 'Y' is entered and the 'Enter' key is pressed, the 'EDIT' menu appears and the edits are lost.

CAUTION

If the 'Save' command is not issued before exiting the 'EDIT SCREEN' (or 'EDIT HEADER') menu, the new screen which has been created or the edits on a current screen will be lost.

3.3.7.2.3 *Exit (System, Edit)*

The 'Exit' command allows the USER to return to the 'SYSTEM MENU.'

```
EDIT MENU          Header   Screen   Exit
Return to the SYSTEM menu
```

When the 'Exit' command is issued, the 'SYSTEM MENU' appears.

3.3.7.3 *Exit (System)*

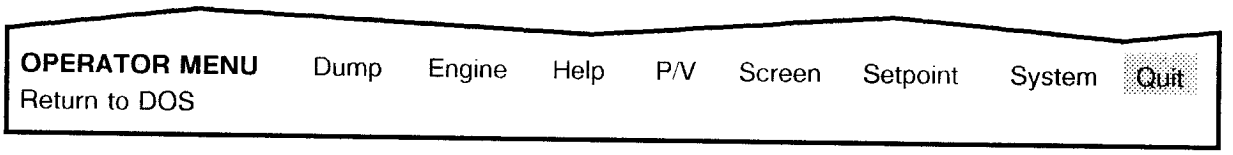
The 'Exit' command allows the USER to return to the 'OPERATOR MENU.'

```
SYSTEM MENU        Comm     Edit     Exit
Return to the OPERATOR menu
```

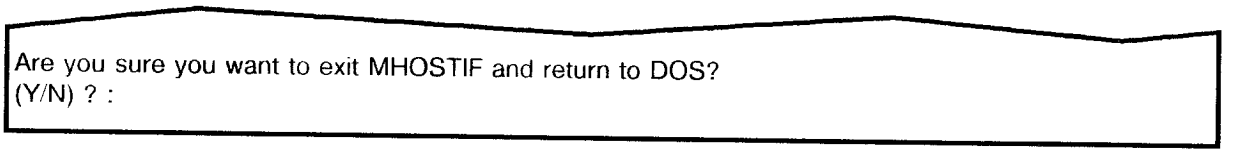
When the 'Exit' command is issued, the 'OPERATOR MENU' appears.

3.3.8 Quit

The 'Quit' command allows the USER to exit MHOSTIF and return to DOS.



When the 'Quit' command is issued, the USER is asked:



When 'N' is pressed, the 'OPERATOR MENU' returns. When 'Y' is pressed, the DOS prompt appears.

Section 4
MHOSTIF REFERENCE MATERIAL

4.0 MHOSTIF REFERENCE MATERIAL

4.1 ENGINE CONTROL SYSTEM CONFIGURATION FILE FORMATS

4.1.1 File Extensions

The following is a list of file extensions used in the MHOSTIF software package:

1)	*.BAT	DOS Batch files	(ASCII)
2)	*.CDF	Configuration Download files	(ASCII)
3)	*.CUF	Configuration Upload files	(ASCII)
4)	*.DPD	DUMP parameter data files	(ASCII)
5)	*.DSF	DISPLAY SCREEN files	(Binary)
6)	*.ERR	Configuration Error files	(ASCII)
7)	*.EXE	MS-DOS Executable Program	(Binary)
8)	*.PVT	P/V data files	(ASCII)
9)	*.HLP	HELP files	(ASCII)
10)	*.FST	FStroke data files	(ASCII)
11)	*.STP	Setpoint Download files	(ASCII)
12)	*.SYS	MHOSTIF System configuration files	(ASCII)

4.1.2 Help File Format

The HELP information is stored in ASCII files having the DOS extension '.HLP' (from here on referred to as 'HELP files'). These HELP files can be edited with a standard word processor but MUST be edited in the NON-DOCUMENT mode (consult your word processor manual).

HELP file names must be three characters long (?XX.HLP). The first character (letter or digit) of an error code is used by MHOSTIF to determine which HELP file to search for the error code information. For example, MHOSTIF looks into the HELP file '2XX.HLP' for error codes starting with a '2' (200 to 299). MHOSTIF looks into HELP file '3XX.HLP' for error codes starting with a '3' (300 to 399), etc. HELP file names starting with letters are used to inform the user about the control system's error codes (AXX.HLP, BXX.HLP, CXX.HLP, etc.).

The HELP files themselves are easy to set up. Since the HELP information of an error code is displayed in the BODY, the description of each error code MUST contain less than 21 lines. MHOSTIF looks for the start of an error code message by examining the first character of each line. If the first character is a period (.), MHOSTIF looks at the rest of the line to see if the error code number to be searched is contained on this line. If it is, then all the text starting on the following line and up to, but not including the next line containing a period (.) in the first character position is displayed in the BODY.

As an example, if MHOSTIF is looking for error code 201, and that section of the HELP file is configured as shown below, MHOSTIF gives the information shown in the shaded area.

- 201

```
ERROR CODE 201
Description:
    TDCREF pulse is not being read
Correction:
    Verify TDCREF input
```

- 202

MHOSTIF does not require a complete error code number sequence. Error codes not used can be omitted, and error codes need not be listed in ascending sequence, although it makes sense to do so.

4.1.3 Dump File Format

The '.DPD' file is an ASCII file that contains the value of the parameters at a given sample time. The first section of the '.DPD' file contains the ASCII strings:

```
"; MANUFACTURER :   BENDIX ENGINE CONTROLS DIVISION"
";"
"; NAME         :   XXXXXXXX"
"; NPARAMETERS  :         YY"
";"
"; DATE         :   MM/DD/YY"
"; TIME         :   HH:MM:SS"
```

Where:

"NAME" is the file name of the screen which was filed.

"NPARAMETERS" is the number of parameters in the file.

"DATE" is the date the data was filed.

"TIME" is the time the data was filed.

Subsequent lines contain the actual engine parameter data. Each line contain a parameter name, a colon ':', the engine ID, an equal sign '=' and then the value of the parameter at the sample time as shown below.

<Parameter> : <Engine ID> = <Parameter Value>

The following lines show an example of a '.DPD' file.

```
; MANUFACTURER  :  BENDIX ENGINE CONTROLS DIVISIONS
;
; NAME          :  GENEIGN
; NPARAMETERS   :        10
;
;DATE           :  01/12/89
;TIME           :  14:05:30
;ENG ID     PARAMETER          VALUE
;-------------------------------------------------------
1           KNHLIMEN : 1     = 1
1           SPK1CMD.01 : 1   = 16.0
1           SPK1CMD.02 : 1   = 16.0
1           SPK1CMD.03 : 1   = 16.0
1           SPK1CMD.04 : 1   = 16.0
1           SPK1CMD.05 : 1   = 16.0
1           SPK1CMD.06 : 1   = 16.0
1           SPK1CMD.07 : 1   = 16.0
1           SPK1CMD.08 : 1   = 16.0
1           SPK1CMD.09 : 1   = 16.0
```

4.1.4 Configuration File Format

Configuration download files are ASCII files that have a '.CDF' extension. The configuration download files MUST be edited in a NON-DOCUMENT mode (consult your word processor manual). The format of the configuration download file is as follows:

```
; Demo configuration download file format
; Comment lines start with a semicolon (;)
;
NPISTONS = 16 ; Parameter name followed by '=' and parameter value
NCYCLES = 2
;
```

The Configuration Download file can contain two types of lines, an assignment line and a comment line.

4.1.4.1 *Assignment Line*

The parameter name is given followed by the equal sign and finally, by the value (spaces are optional).

4.1.4.2 *Comment Line*

A comment line is always preceded by a semicolon (;). A comment line can be inserted at the end of an assignment line or started on a new line.

Special comment lines are used to notify the MHOSTIF about the type of assignment. There are three types of assignments:

1) Configuration parameter assignments
2) Error code assignments
3) I/O channel assignments

- Configuration Parameter Assignments (Default)

  If the comment 'CONFIGURATION-PARAMETERS' is detected in the configuration download file, all subsequent assignments are assumed to be configuration parameters.

- Error Code Assignments

  If the comment 'ERROR-CODE-ASSIGNMENTS' is detected in the configuration download file, all subsequent assignments are assumed to be error code assignments.

- I/O Channel Assignments

  If the comment 'I/O-CHANNEL-ASSIGNMENTS' is detected in the configuration download file, all subsequent assignments are assumed to be I/O channel assignments.

NOTE

The special comments lines MUST be written exactly as above (upper case, etc.).

Example:

```
;                Demo Configuration Download File format
;
;                    CONFIGURATION - PARAMETERS
;
NPISTONS = 16              ; Number of pistons for the engine
NCRANKNC = 1440            ; Number of NC pulses per crankshaft revolution
;
;                    ERROR - CODE - ASSIGNMENTS
;
120 = 50.0, PMALARM, PMSPARK, 1;
301 = 3.0, PMALARM, PMSHUTDN, 0;
505 = 300.0, PMALARM, PMSPEED, 10;
;
;                    I/O - CHANNEL - ASSIGNMENTS
;
TCS = ANIN110,0,1000       ; Compressor Suction Temperature
TCD = ANIN111,0,1000       ; Compressor Discharge Temperature
```

4.1.5 Setpoint File Format

Setpoints can be stored in an ASCII file that has an '.STP' extension (this file is called a 'Setpoint Download File'). The setpoint download files MUST be edited in a NON-DOCUMENT mode (consult your word processor manual). The format of the setpoint download files is as follows :

```
; Demo setpoint download file format
; Comment lines start with a semicolon (;)
;
SPDREQ = 350 ; Parameter name followed by '=' and parameter value
SPKINC = 6
;
```

The download file can contain two types of lines, an assignment line and a comment line.

4.1.5.1 *Assignment Line*

The parameter name is given followed by the equal sign, and finally, by the value (spaces are optional).

4.1.5.2 *Comment Line*

A comment line is always preceded by a semicolon (;). A comment line can be inserted at the end of an assignment line or started on a new line.

APPENDIX A IBM Extended Character Set (Graphic Characters)

Character Set Reference (128-255)

DECIMAL VALUE ➡		128	144	160	176	192	208	224	240
⬇	HEXA DECIMAL VALUE	8	9	A	B	C	D	E	F
0	0	Ç	É	á	▒	└	╨	∝	≡
1	1	ü	æ	í	▒	┴	╤	β	±
2	2	é	Æ	ó	▓	┬	╥	Γ	≥
3	3	â	ô	ú	│	├	╙	π	≤
4	4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	5	à	ò	Ñ	╡	┼	╒	σ	⌡
6	6	å	û	ª	╢	╞	╓	μ	÷
7	7	ç	ù	º	╖	╟	╫	τ	≈
8	8	ê	ÿ	¿	╕	╚	╪	Φ	°
9	9	ë	Ö	⌐	╣	╔	┘	Θ	∙
10	A	è	Ü	¬	║	╩	┌	Ω	·
11	B	ï	¢	½	╗	╦	■	δ	√
12	C	î	£	¼	╝	╠	▄	∞	n
13	D	ì	¥	¡	╜	═	▌	φ	2
14	E	Ä	₧	«	╛	╬	▐	∈	■
15	F	Å	ƒ	»	┐	╧	▀	∩	BLANK 'FF'